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of the association for physical and mental rehabilitation

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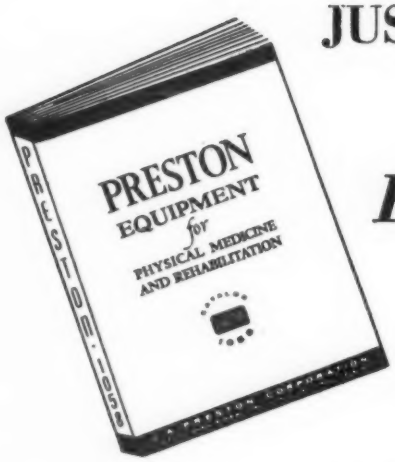

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THE JOURNAL OF THE ASSOCIATION FOR PHYSICAL AND MENTAL REHABILITATION

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PHYSICAL FITNESS WORK WITH NORMAL AGING ADULTS*

(Athletes, Ordinary Normals, Unfit Normals, Some Specific Therapies)

THOMAS K. CURETON, Ph.D., F.A.C.S.M.**

Scope of the Work of the Physical Fitness Laboratory

For the last fifteen years we have experimented at the University of Illinois with various programs of physical fitness for middle aged adults up to the age of 68 and have included several more beyond this age. Almost all of the 2,000 who have joined the experimental work of the Physical Fitness Research Laboratory in this time, either to work individually or as members of a small experimental or control group, have left records of the changes they have made. From time to time over the past 15 years, reports have been published in various professional journals and subsequently in some of the popular magazines to describe changes which can be induced by various physical training progress.

In 1952, I delivered a series of lectures in seven European countries at leading colleges of physical education and medical schools. The summary of these addresses was published in *Sport Medicine* (1953) as the opening technical address of the International Symposium of Sports Medicine and Physiology held at Helsinki in 1952. The theme, constantly pressed, carried the title, "Physical Training Produces Important Changes, Psychological and Physiological." In 1955 the research section of the College of Physical Education Association agreed in summary that the evaluation of such changes was the most important research work to be carried on in physical education over the past ten years.[1]

Such rehablitation work in middle age would appear to be of three kinds:

1. Programs to activate the interests, morale, will power and self-understanding (known as psychological) and concerned in the main with reasons and urges for participation. Benefits are reflected in personality changes.
2. Programs to improve the physical fitness of the individual with measurable benefits to the physique, the cardiovascular system and various motor abilities. Cooperative programs of fitness have been developed with the faculty, retired faculty, schools or colleges of Agriculture, Engineering, Commerce, Music, Education, Fine Arts, Communication, and Physical Education.
3. Exercise brought to bear upon specific parts of the body needing rehabilitation; specific injuries or deteriorated parts. About 15 doctors recommend subjects into our program and conduct the medical screening examinations.

Psychological Aspects

These activities center on having each individual see himself in terms of (1) A check-list of his past 5-years participation in sports and physical activities, listed in three columns as strenuous, moderate, and mild; (2) A check-list of health habits and history; (3) The Cattell 16 Factor Personality Test and Profile Rating; (4) Sheldon's Personality Appraisal Based on Constitutional Type Dominance with check-lists for traits classified on somatotonic, viscerotonic, or cerebrotonic; (5) The adult physical fitness tables. This preliminary program takes one to two months. It culminates in one or more individual counseling sessions, an associated medical examination and perhaps a talk with one or more doctors. Certain papers describing the types of programs and associated outcomes are given to each subject. Finally, definite goals are set for each case by mutual agreement, and prescriptions are outlined for exercise.

Unless the subject has been in similar programs before, he or she will need to be coached along, talked to a great deal, and led day by day by a competent instructor. The latter will insist upon the exercises being done correctly and will set the

*Presented at the First Tri-Organizational Conference, Chicago, Ill., July 11, 1957.

**Professor of Physical Education and Director of the Physical Fitness Research Laboratory, University of Illinois.

[1]There are now about 150 graduate (M.S. and Ph.D.) theses with results bearing on this work. The assistants in this work are usually graduate students who take several supporting courses such as: P.E. 451 (Scientific Foundations of Physical Fitness); P.E. 452 (Scientific Analysis of Physical Education Activities); P.E. 453 (Research Methods in Anthropometry and Body Mechanics); P. E. 495 (Research Methods in Health and Physical Education); P. E. 407 (Sports Psychology); and H. E. 401 (Problems in Health Education); and supporting courses in statistics, physiology and psychology.

model, the dosage and induce sufficient variety day by day to offset monotony. There is no substitute for an enthusiastic, thorough, capable instructor. If he is good, then he is himself the best argument, the most convincing evidence, and will win the subject day by day to relatively higher levels of motivation and participation.

The psychological program sets the stage for important physiological benefits which come along slowly, and only come by hard work performed with regularity. For a month or two the emphasis is educational, the dosage being cautiously advanced little by little. Overwork, with its concomitants of staleness and soreness, mental depression and lassitude, should be avoided.

Selected mimeographed papers are given to each subject, according to need, to advance his understanding about the particular problem, after this has been brought into focus.

Needless to say, all records, test sheets, letters, previous examinations, medical and dental summaries, etc., should be consolidated into one manila folder for the initial round (T^1 series). Others can be added later for the final round (T^2 series), or for subsequent years. The most important records are those that have been followed for several years.

Basic Physical Fitness Programs

Most of our subjects do not know how to exercise when they first come to us. The introductory work is done by copying a leader, but at one's own pace at the start of the work. Newcomers are admonished to "Learn the exercise properly but do not try to keep up with the leader if he goes too hard or too fast." The basic exercises are similar to those published in *Sports Illustrated*, (Jan. 17, 1955). Men are warmed up first with 25 minutes of continuous calisthenics, then sent to the showers to wash. Then they do the prescribed swimming program under supervision. Endurance is stressed. Every day some part of the work is selected to be explained in a short talk, or in two or three short talks during recuperation "breaks" of one or two minutes.

Several patterns of endurance training are introduced:

1. Interval training.
2. Repetitious exercise.
3. Double dose exercise.
4. Triple dose exercise.
5. All-out test exercise.
6. Cross-country walk and jog, etc.
7. Long jogging or swimming, running, cycling, etc.
8. Week-end hiking, three to ten miles.

These patterns are sometimes imitative of the best training patterns known in athletics but with the dosage cut down for interval training, Fartlek training or obstacle courses.

In the basic program daily attendance is carefully checked for all men being followed by tests, in matched groups, or on dietary supplement programs. Regularity is preached, day in and day out—also the gospel of "Make it up, if you miss!"

The basic program includes about two months for medical and dental exams, tests, consultations, and prescriptions; four months of progressive exercise; then almost two months of finishing off tests and measurements. Usually all areas are covered, involving about 60 tests. If the subject is very special, and the need is great enough, we may do the entire 128 tests and meaurements. One program is for women, another is for men. In a typical year we handle 60-100 middle age men; 30-60 women; 60-100 young men; and 75-100 boys in the basic program, not counting advanced special subjects such as athletes and certain control subjects who do not take the exercises.

Individual Prescriptions for Specific Needs

As soon as the preliminary (T^1) testing program is completed, an individual conference may pin-point specific needs. Such needs may be discovered from medical recommendations, from the health habit and activity questionnaires, from the fitness tests or by interview itself. Typical examples of specific needs are: (1) Low basal metabolic rate; (2) Postural ptosis; (3) Splanchnic circulatory ptosis; (4) Fat; (5) Soft abdominal wall, weak feet and legs; (6) Low backaches; (7) Poor vital capacity residual; (8) Low strength per pound of weight; (9) Poor circulatory adjustment to work; (10) Eye fatigue; (11) Chronic Fatigue; (12) Anxiety; (13) Nervous tension; (14) Poor flexibility; (15) Poor dietary habits; (16) Poor upper body and chest development; (17) Poor breath-holding time; (18) Slow total body reaction to light and sound signals; (19) Poor swimming ability; (20) Deficiencies in balance; (21) Deficiencies in agility; (22) Deficiencies in power; (23) Deficiencies in endurance; (24) Low Schneider Test score or other indications of autonomic imbalance; (25) Poor lateral musculature; (26) Poor posture; (27) Weak knees; (28) Constipation. The subjects usually report on the work to their own personal doctors.

For these types of difficulties systematic and progressive exercise is the principal ingredient leading to buoyant dynamic health. But improved living habits are also important—especially eating not more, but better food. For most, this means less alcohol and fried food, fewer cigarettes, and more fresh fruits, dried fruits, stewed fruits, red-yellow-green vegetables, lean

meat, rich, and whole grain cereals. Supplements of wheat germ oil, wheat germ, vitaminized yeast and vitamins may be added by prescription or by choice; and these are sometimes included in the experimental programs.

Causes of Unfitness

Disease, unalleviated stress, sedentary living and associated clogging-up will kill the middle aged and, conversely, regular exercise and reasonable balance in living will tend to conserve life, energy and ability. The efficiency of the body for labor, love and life in general may be greatly extended by unusual care and physical conditioning in the middle aged period. It means that prevention rather than cure should be emphasized. Most of all, this means a graduated, dynamic exercise program with emphasis on rhythmical endurance exercises.

However, the typical adult who comes to us for fitness work has little concept of regular, systematic physical training. He knows he needs fitness, but he usually does not exercise and, in fact, knows very little about procedure, types of exercises, graduation in dosage, precautions, or effects to be expected. The leader accepts the responsibility for education in these matters, and offers to see each person individually to answer his questions. In certain cases which bear on the chemically abnormal the physician will usually send a note or the case is talked over.

In the files are many individual case reports, some of which have been published. It is not possible to give all of the results in this paper but a condensed summary can be given.[2]

Summary of the Effects of Physical Training

Circulatory Effects

In the trained state the arterioles and some of the capillaries are persistently dilatated in the skeletal muscles, heart muscle, lungs and large blood vessels so that these structures are more adequately supplied with blood-bearing Oxygen and nutrients. In this state they are relatively more ready for action and are thought to be healthier and less susceptible to fatigue. The heart minute volume is somewhat greater at rest, and the basal metabolic rate is usually 5 to 20% higher than it otherwise would be in the sedentary state. The respirations are fuller and deeper, and all cardiovascular tests are higher when they are properly scaled. There is greater tolerance of exercises, and any given exercise used in the training can be continued longer with less proportionate distress. Muscular endurance in a variety of specific exercises can be greatly improved if they are used in the training.

Such gains are thought to be additions to health brought about by the dynamic approach. This effect may last for several weeks or a few months but such fitnesses deteriorate rapidly if *all* exercise is stopped. The dilatation of the small vessels, counteractive to vasoconstriction is thought to be one of the most important effects along with increased capillarization of the active working tissues and reduction of fat. Muscle tone and vascular tone improve and peripheral resistance decreases as diastolic blood pressure is reduced. Exercise of the right kind produces relatively greater changes in the variables mentioned than do diet, massage or types of mental therapy.

Effects on the Nervous System

In the trained state the nervous system is trained for action rather than inaction. In general, the individual is trained away from persistent parasympathetic tendencies and toward higher sympathetic and vagus tone. Training raises the blood flow persistently and improves cardiovascular tests of several types: (1) the Blood Flow Tests; (2) The Autonomic Nervous Balance; (3) the Hydrostatic Adjustment Tests. Low cardiovascular tests indicate that the cardiovascular system and the supporting nervous system are not trained for action or stamina and that there is relatively less resistance against the fatigue associated with blood stasis or vasoconstriction and other parasympathetic tendencies.

It is interesting to note that the reactions to light and sound stimuli are increased by training. Such reactions are not "fixed in the body type" nearly so much as they are the result of efficient use. We have shown that the Vertical Jump Reaction Times have been improved as much as 50 standard scores in men of 50 years of age over a six-month training period.

Great nervous economy can result from physical training with respect to performing specific work tasks. But we must be aware that one specific work task is no measure of many other types of work tasks. We tested Ralph Wright who was very efficient in the pool but was not trained for running and did very poorly on the treadmill. In testing several men for Oxygen intake in the pool, on the bicycle, and on the treadmill, all at maximum endurance effort, the results differ widely for each individual. If there is undue tension or poor balance in an effort, the blood flow will not be at a maximum. John Marshall ran very high intakes in the pool in his maximum exer-

[2]Thesis abstracts are available as follows: (1) *Univ. of Illinois Thesis Abstracts*, 1924-53, Urbana; 213 Huff Gymnasium, pp. 280. ($3.00); *Ibid*, 1952-53 ($1.00); *Ibid*, 1953-54 ($1.00); *Ibid* 1954-55 ($1.00); *Ibid*, 1955-56 ($1.00); *Ibid*, 1956-57 ($1.00).

tion tests, but he knew how to relax better than most other swimmers and this was probably his secret. Men with high Oxygen intakes on the treadmill give relatively low values in the pool "all-out" tests if they do not know how to swim well and tense-up unduly.

Neuro-muscular Effects

Gymnastic balances which are very hard at first become easy as the kinesthetic nervous sytem is trained. Practically all balance stunts are very educable, as the kinesthetic nervous adjustments are made and become persistent. Witness the great nervous waste in the novice skier and by contrast, the ease and grace of the expert. Witness the fear of the beginning swimmer with his tense muscles, inhibited respiration and blood flow—sometimes resulting in a headache—then, by contrast, the beauty and grace of the expert ballet swimmer. Such contrasts exist in all fields. Even in stepping up and down on a bench for five minutes week by week, we have shown that very appreciable economy results within eight weeks, with marked decline of the Oxygen intake curve. The Oxygen requirement gets less and less as the subject learns better balance and steps with greater economy. Thus there results Sherrington's integration effe t.

As a result of training the skeletal musculature becomes denser as is shown by the prediction of weight from bone, fat and muscular bulk measurements and also by specific gravity tests in the pool. Thus, the tissues are trained toward firmness and readiness for action. In such a state there is less fat in the muscles, and there is usually better circulation within the muscle. The tissue is better supplied with capillaries. We conceive this to be the most favorable condition for the healthy state of human tissue. During the trained state the tensile strength of all of the tissues bearing stress is greater; there is also greater elasticity and less susceptibility to injury.

Effects Upon the Blood

The blood is also favorably conditioned by training. It is able to carry more Oxygen per liter, and there is more total hemoglobin. Usually, the plasma shows relatively more total protein content and the blood is also tougher in that it does not "crack up" as easily under severe exertion. The white corpuscular count does not rise as much in response to hard exercise, meaning that the homeostasis is better maintained by the trained person in the face of stress.

Effects Upon Eyesight

Eyesight, as indicated by the flicker fusion frequency test, is more acute in the trained state. This improvement parallels the circulation. When the skin contains large amounts of blood withheld from the systemic circulation, the eyesight is relatively poorer than when the systemic circulation is best, as after a swim in cold water or after a cold hip bath. When circulation is relatively poor from long sitting and no muscular exercise to move the blood, the threshold for seeing the flicker decreases, just as it does in anoxic states at relatively high stimulated altitudes in the decompression chamber.

Practical Effects

Most marvelous and practical of all, from the point of view of doing work, is the relatively great improvement in muscular endurance, due partially to improving the cardiovascular condition and also to specific conditioning of the muscle-nerve junctions and neural paths of control. Co-ordination, speed and resistance against fatigue increase as well as strength. Such changes are to be considered mainly as changes in the nervous system. Strength per pound of body weight increases in the force and speed exercises of the power type, although mesomorphs will usually be found to have the best scores if they are in ordinary condition. Even mesomorphs deteriorate greatly if they give up all exercise. Strength is important; it requires strength to move the body around continuously by walking, running, swimming, climbing, hiking with a load, chopping wood, paddling a canoe, pedalling a bicycle uphill and to do all such kindred activities which make us useful and practical in life.

The trained man or woman usually looks better after training than when untrained. The posture will usually be better, or there will be relatively better circulation in the same postures. We all know the firm healthy look about the face of the athlete. The expanded chest related to the size of the normal abdominal girth will be greater than when untrained. While for athletic advantage a wide shoulder breadth related to the width of the hips is preferred, we see that there are many different types of activities in sport, and there is literally a place for every type. The expert will understand these relationships so that guidance can be given to the many who do not understand their natural aptitudes. The "lateral" type will always be broader than the "linear" type despite any plan or pattern of exercise, but it is possible to slim or thicken the body within reasonable limits if the right pattern of exercise is followed with great enough intensity.

It is very impressive to see how young men and old men, and even housewives, improve under the influences of physical training. Such changes are usually from 30 to 50 standard score percent following intensive training programs in the motor fitness tests which indicate degrees of ability in balance, flexibility, agility, strength, power and endurance. Studies of

these changes have shown, however, that there are many specific types of effects. I am prompted to say that a man is very nearly what his activity or his lack of activity makes him. It is humbly suggested that we spend more time studying these types of changes rather than preaching that exercise is harmful unless wisely directed. We do not appreciate the oft repeated phrase that "endurance exercises will hurt young children" when no data are given to support the statement. I would say that any activity is better than no activity. The future for medicine and physical education alike is to understand the effects of various types of exercise, and we have hardly begun to examine the evidence for the integrating effect of exercise. Many of the benefits which we value highly do not seem to occur under casual group game participation but require gradual progressive forms of training which finally reach harder levels of work than is usually provided in volleyball, bowling, golf and social games.

In modern civilization we have an enormous amount of sitting and static standing in the white collar office work, in the factories and in the social divisions which involve eating, drinking, gambling, playing cards, lounging in clubs and at teas and receptions. If one wants to avoid fattening arteries, flaccid vessels and muscular tissue, paunches and ptoses, he will keep on the move more, exercise more and cultivate a willingness to do physical work. It certainly seems true that people lose their circulatory fitness because of too little activity and too much alcohol and fried foods. In the examination of several hundred middle aged men we have found that the ones who have good circulatory fitness are those who have kept up their activity and eat and drink very moderately. Those who deteriorate relatively quickly seem to be muscular men who have gone sedentary, those who have grown soft and fat, and those who exercise only with their tongues, eyes and pencils. The emphasis of the medical, religious and educational professions upon passive procedures which bring indoor confinement have placed a social emphasis upon sedentary pursuits to the detriment of health. Some individuals within these groups have even decried the values of exercise to health and point to great athletes who have deteriorated. We have the beginnings of understanding in this area but as an area of applied science which deserves development, we have a long way to go with the experimental work. It is quite probable that the Fountain of Youth for middle aged people will be found in the wise use of leisure time to maintain their physical fitness. With the development of places like the Physical Fitness Research Center, the possibility of guiding businesses, as well as industries and individuals by means of good examinations and the prescription of positive health building procedures, the demonstration of good exercises and fitness procedures, seems a great step forward.

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OBSERVATIONS ON THE VALUE OF PULMONARY EXERCISE

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FRANK J. SCHAFFER, M. D.**

Many breathing exercise programs are being conducted by physical medicine and rehabilitation services in hospitals in this and other countries throughout the world with variable results. The final goal that is being sought is to achieve improvement in pulmonary function, thus resulting in greater comfort and independence for the patient.

To ascertain whether or not a patient is improving under our care, it is necessary that fairly accurate measurements be made before and at regular intervals during time of treatment.

At this hospital we have many patients with varying degrees of respiratory incapacity. All except a few of the most acute cases are on an intermediate ward and suffer from such chronic illnesses as emphysema, bronchiectasis, chronic bronchitis, and bronchial asthma. Until several months ago, many of these patients were unable to allay dyspnea except with bed rest; others had so low a tolerance of activity that they could not even perform their self-care activities.

In October 1956, a program was initiated at this hospital to help these patients, and the corrective therapy section was delegated the responsibility of conducting pulmonary exercises and postural drainage for the "wet cases." Each patient was first given a vital capacity test using a wet spirometer. His total respiratory excursion was measured in liters as well as the number of seconds it required him to evacuate his lungs. Chest measurements were taken at the nipple line to determine the amount of chest expansion. Then an exercise tolerance test was administered to most patients, omitting those with heart disease or other contraindications. A stationary bicycle was used for this purpose with controlled weight resistance. The pulse rate was taken before and after exercise. At the end of a two minute period, the degree of dyspnea was noted, and this information was helpful in determining the amount of activity and the length of treatment time compatible with each patient during the initial treatment periods. The chest service followed up later with a more complete pulmonary function study. Information was exchanged freely between the chest physicians and the therapeutic team.

Upon the completion of the initial tests, each patient was started on a program of breathing exercises. Considerable time was spent at first telling the patient why his breathing was not normal and what we were attempting to do for him. Motivation was found to be an all-important factor in the success of the program. Exercise techniques were employed similar to those used by Cheney and Denny[1] with the patients being treated in groups of four or five in a clinic situated near the ward. It was noted that the majority of these patients were in their fifties and sixties. Some with emphysema of long standing had deformities of the chest and degeneration of elastic tissue with resultant damage to lung structure. Not a few of them viewed this attempt at rehabilitation with overt skepticism.

Most of the patients took their exercises in the supine position, and great care was taken by the therapist to make the patient comfortable. Walsh[2] recommends that a pillow be placed under the head and shoulders, raising them slightly above the base of the chest and allowing transmission of a greater proportion of chest wall inward force toward the lung base where it can do the most good. Another pillow is placed under the knees raising them slightly above the trunk, thereby relaxing the abdomen and chest. This tends to facilitate the action of the diaphragm and musculature of the abdominal wall.

Abdominal pressure is used to aid expiration. Manual pressure and sand bags are employed for this purpose. Expiration is carried out very slowly to prevent air trapping. Inspiration is quick and short with an explosive action being desirable. In addition to the diaphragmatic breathing exercise, a technique was introduced by the therapist employing a principle of the Sylvester method of resuscitation. It consists of raising the arms from the supine position simultaneously in forward flexion of the shoulders to an angle of about 135 degrees from the sides. This raises the walls of the chest and invites air into the lungs. Deep breathing is avoided with only a moderate in-

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take of air being recommended. The patient then lowers his arms to the starting position during the expiration phase. Dorsiflexion and plantar flexion of the ankles are done along with the arm raising and lowering to supply a total reflex stimulus.

A number of these patients with obstructive pulmonary emphysema were prescribed postural drainage by the physiatrist to precede the breathing exercises. The elbow-to-knee position described by Russo[5] was found to be the most tolerable position for most patients; others obtained better results from a prone position with the body resting at an angle of about 10-15 degrees and the head hanging over the low end of the table.

The duration of the exercise period for each man was determined by his age and physical condition. Additional treatment time and a larger number of repetitions on each exercise were given as the patient progressed until he was able to tolerate a fifteen or twenty minute period. During the third month, he was instructed to perform the exercises in the morning after awakening, in the middle of the afternoon, and again in the evening. He was also told to do the exercises before an impending dyspneic or asthmatic attack.

From October 1, 1956 to April 30, 1957, twenty-nine patients were treated in the corrective therapy pulmonary exercise program. Vital capacity tests and chest measurements were repeated at three-week intervals. The following results were achieved: fourteen (48.2%) made gradual and sustained improvement during their tenure of treatment; seven (24.1%) made sporadic progress at times, but results varied and remained inconsistent with no conclusive evidence beparison; five (17.2)% continued to grow worse in too short a period to establish a base line for comparison; three (10.4) % continued to grow worse in spite of treatment and were discontinued; one of the patients of the latter group expired after an acute illness caused by lung abscess.

Of the fourteen who achieved gradual and sustained improvement, all without exception became more efficient in ambulation and self-care. These patients were able to walk to the dining room for their meals, to the recreation hall and go out on pass occasionally. Four of this group were discharged from the hospital to their homes, and an additional four were sent to domiciliaries as duty members.

The pulmonary exercise program is continuing at this hospital and has been expanded. The initial results are encouraging, but even better results are possible over an extended period of time. Some chronic patients who did not respond at first are now showing some improvement for the first time.

Summary

In the presence of data recorded after the first seven months of the pulmonary exercise program, it appears that corrective breathing exercise and postural drainage have an important part in the management of chronic pulmonary emphysema and bronchial asthma. The patient has been given a means by which he can help himself. This has proven a very powerful psychological stimulus. His efforts are rewarded by greater comfort and independence in the activities of daily living.

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Atomic Medicine Probes Mental Illness

Veterans Administration for the first time is using atomic medicine to probe the baffling mysteries of mental illness. By tagging substances with radioactive phosphorus, researchers at the VA hospital in Sepulveda, Calif., are tracing the compounds through complex chemical and biological changes in the body for clues to the origin of mental disease.

The group is especially interested in amounts of a compound called serotonin in the central nervous system which may be involved in the action of tranquilizing drugs. They also are using atomic medicine to study the effects of drugs that are used in treatment of or research into mental illness.

Research with radioisotope tracers is providing new information that will lead to better understanding and treatment of hundreds of diseases, VA said. Cancer, heart conditions, and hardening of the arteries are among the main illnesses under investigation in the nationwide radioisotope program involving some 600 studies at 51 hospitals.

The VA hospital in Boston is studying resistance to leukemia, or cancer of the blood-forming organs, and how the disease is transmitted.

The Hines, Ill., VA hospital is investigating effects of hormone treatment in heart attack patients, the role of fat in diet of patients with hardening of the arteries, new devices to locate brain tumors, and implantation of radioactive phosphorus at sites from which brain tumors have been removed.

At the Ann Arbor, Mich., VA hospital, doctors have used radioactive phosphorus in testing success of skin grafts. Rose Bengal, a radioactive synthetic dye, is helping in study of jaundice at the hospital, and radioactive iron is being used to measure effectiveness of cobalt in treatment of anemia that does not respond to other therapy.

The VA hospital in Birmingham, Ala., is studying rheumatoid arthritis by means of radioisotope tracers.

At the Houston, Tex., VA hospital, a research group has tagged snake venom with radioisotopes for study of diffusion of the poison.

The Kansas City VA hospital is working to develop a new clinical test for gout based on alteration in excretion of uric acid from the body.

The Seattle VA hospital is studying the growth influence of natural radioactivity that reaches the earth from outer space.

A STUDY OF THE BALANCE OF BELOW-KNEE AMPUTEES BY MEANS OF THE BEAM-WALKING TEST.

MARSHALL GRAHAM*

Introduction

Recently, the author was involved in the study of several performance factors of a group of below-knee amputees, whose prostheses (artificial limbs) had been altered under controlled conditions. Included in these investigations was a study of the effect of the prosthetic change on equilibrium.

Review of the Literature

The study of balance has been of interest to physiologists and psychologists for many years, during which time various definitions have been presented. The concept of balance is most often divided into two parts: static and dynamic stability. Everett Whitney[1] has described static stability as:

(a) Physically—the body is acted upon by forces whose resultant is O.

(b) Neuromuscularly—the maintenance of a specific posture by means of the antagonistic muscles resulting in a minimum of general body sway or finer muscular movements.

(c) Psychologically—the postural orientation of the body when the organism is motivated to remain motionless.

He goes on to describe dynamic stability as "the muscular activity of the organism over changes in gross postural orientation necessitating further muscular activity, to re-establish the orientation."

Ruth I. Bass has defined dynamic stability as "the type of balance that is concerned in keeping one's equilibrium in motion or while changing from one balance to another".[2] The present study was concerned primarily with the concept of dynamic stability, since this is most closely associated with ambulation.

To determine if equilibrium of below-knee amputees was affected as a result of changing from one type of socket to another, a procedure was instituted called the Beam-Walking Test, which has been used as a test of dynamic stability for many years. Although a short version of the Beam-Walking Test by Fisher, et.al.[3,4] produced split half coefficient correlations of .77 and .85, a change in technique by Whitney[5] (allowing two falls by the subject during each trial) resulted in reliability coefficients of .85 to .89 for a test of six trials. Subsequent studies by Dain[6] and Hanson[7] produced reliability coefficients of .84 to .89 for a variety of age groups. Seashore[8] also concludes that the Beam-Walking Test is a useful and reasonably reliable procedure. Heath describes a "Rail-Walking Test" used in studies of the mentally retarded[9] and

Figure 1

A below-knee amputee negotiating the 1-inch beam during the Beam Walking Test.

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later for the United States Army.[10,11] He found a reliability coefficient for 100 subjects of .94±.01.

In view of the fact that the subject propels himself forward by means of his own power and is continually changing his anatomical positions, the Beam Test is considered to be a test of dynamic rather than of static stability. To the author's knowledge, there have been no previous studies of amputee balance that utilized the technique of the Beam-Walking Test.

Procedures

All prosthetic and test factors were kept constant, except for the exchange of the conventional wood socket (that part of the prosthesis that comes into contact with the amputation stump) for a specially fabricated rubber lined plastic covered socket, which was made in accordance with specifications of the developing agency.[12]

The prescribed technique for negotiating the Beam-Walking Test was as follows: with both hands on hips, the subject walked each of four beams by placing the heel of the forward foot against the toe of the planted foot. (See Figure 1) The course of the test consisted of four beams ten feet long, with the walking surface 4½ inches from the floor. The widths of the beams started at 2 inches and decreased by ½ inch increments to the narrowest beam of ½ inch width. The starting points were so arranged that, regardless of the length of the amputee's foot, each subject took exactly ten paces to walk to the end of each beam.

A scoring system was devised so that a run ending at any point along a beam could be recorded numerically. Regardless of the starting position, the portion of the beam to be negotiated by the subject was subdivided into four equal parts. The subject was scored one point for each subdivision he had reached, there being a total of four points for each beam and sixteen points for an entire series. The higher score denoted better stability. A complete run on the series of beams was considered to be ended when the amputee fell off for the *second* time during that run. The first fall was not counted and the subject continued from the point at which he first fell. A "fall" was considered to be any of the following:

(a) Either foot touching the floor, the supports, or the side of the beam
(b) Placing either foot crosswise on the beam instead of lengthwise
(c) Not making the heel-to-toe contact as progress was made along the beam
(d) Removing one or both hands from the hips

The complete test consisted of six trials, the first two of which were practice runs. Seashore[13] reported that a score increase was found between the first and second trials, but not between subsequent trials. It was therefore considered that the last four trials could safely be used as an evaluation of dynamic stability as scored by the Beam-Walking Test.

TABLE 1

BEAM-WALKING TEST SCORES

Subject	*Leg Worn* Conventional	Experimental	Differences
I	2.50	2.50	0.00
III	5.00	6.75	1.75
IV	9.25	14.25	5.00
VI	10.50	13.50	3.00
VII	3.00	5.25	2.25
VIII	6.00	11.00	5.00
IX	3.25	6.00	2.75
X	12.25	14.00	1.75
XI	8.00	8.25	0.25
Means:	6.64	9.06	2.42
		"t" score	4.10
		probability	.01

Results

Table 1 presents the final data for the Beam-Walking Test on nine below-knee amputee subjects. The scores listed in Table 1 were obtained by averaging the last four of six test runs for each amputee. The maximum score for an individual run was sixteen, since a score of four was allowed for each of the four completely traversed beams. As previously indicated, the first two trial runs by each subject were considered to be practice and were not included in tabulating the final results.

As shown in Table 1, the mean performance improved by a score of 2.42 when the test subjects wore the soft socket. The value of "t" was determined in order to ascertain the significance of the difference between the mean score with the conventional sockets and the mean score with the experimental sockets. The null hypothesis stated that there would be no

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A DECADE OF PROGRESS IN CORRECTIVE THERAPY*

JOSEPH H. VAN SCHOICK**

Introduction

Corrective Therapists can look back over the past ten-year period and regard it as one of the most significant decades in the development of the concepts of adapted physical education. This is particularly true in view of the progress that has been made in the application of the principles and techniques of exercise in the medical field. We are all familiar with the history of corrective therapy, of its growth in other countries, particularly in England and in Europe, where the remedial gymnasts have an accepted place in medical treatment. Most of us are familiar with the physical reconditioning program which applied a reversal of the long accepted Weir-Mitchell theory of bed rest, for many years taught in medical schools and accepted by physicians as a guiding principle in medical treatment. Because of the obvious value of physical reconditioning in military hospitals during World War II, the Veterans Administration in 1946 initiated Corrective Therapy as a section of the Physical Medicine and Rehabilitation program. At that time there were introduced certain basic principles which represented a natural progression to higher levels of the scientific practice of exercise in patient treatment.

This new philosophy was well expressed in one of the earlier publications of the Veterans Administration, which stated:

> The philosophy of Corrective Therapy stresses *working with, as well as on,* the patient through provision for cooperative relationships in which the therapist teaches and directs while the patient himself accomplishes the desired objectives. It is a physical and a psychological process . . . In a broad sense, Corrective Therapy is the application of the principle, tools, techniques, and psychology of remedial physical education to assist the physician in the accomplishment of a prescribed objective.

Professional Growth

In the intervening years, we have gone far beyond a stage of concern for bed exercises, clinic routines, adaptations of games and physical measures for expressing pent-up emotions. Deeper professional insight has evolved around such intriguing concerns as motivations, interpersonal relationships, maintenance therapy and research studies. All of these have lead to more effective and widening areas of service in the total patient treatment regimen.

Dr. John Eisele Davis, the founder of this organization and former Chief of Corrective Therapy in the Veterans Administration, has described this professional growth very well:

> A new concept of exercise as a functional activity has added significant meaning and a very practical utility to corrective exercise. This new concept simply means that physical exercise must serve a useful, practical purpose if it is to become an adjunct to medicine; that it must get away from merely amusing the patient and catering to his whims, from making people strong and alert, important as these aims are in individual cases. Corrective exercise must assist the patient to develop his own potentials for a mutual attack upon the illness both by the patient and by the therapist. The techniques of the therapist begin to revolve about the practical areas of retraining—feeding and dressing one's self, for example. The therapist thus gets away from the role of the muscle man or coach or even the teacher of health education. His specialization involves an understanding of the pathology of disease in relation to exercise techniques applied to specific physical and mental conditions.[1]

This trend of emphasis is obvious in the many articles which have been written by corrective therapists and published in the *Journal of the Association for Physical and Mental Rehabilitation,* the *Physical Medicine and Rehabilitation Information Bulletin,* and other publications.

Motivation

I was particularly impressed with a paper titled, "The Geriatric Problem at VA Center, Bay Pines, Florida," by J. A. Bozovich, corrective therapist, which will be published in the near future. He described the corrective therapy program in operation at his station for older chronic patients. His observations on the problems of *motivation* are worth mentioning at this time.

> Motivation of the patient is the therapist's major problem, and we find patients responding in different patterns. First, there are those who want to return home as soon as possible. This group is easily motivated. The important factor here is the danger of patients over-exercising in their eagerness to return home. Once the patient's tolerance for exercise develops sufficiently, he is more or less safely on his way. However, we must recognize that in this age group anything can happen at any time in the way of a relapse. So, caution is necessary.
>
> Secondly, there is the group of patients who are subdued by knowledge respecting their condition, and as a

*Presented at the First Tri-Organizational Conference, Chicago, Ill., July 10, 1957.

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result, feel insecure and unhappy. They believe that they will never leave the hospital because of the severity of their conditions. However, after observing other patients in the clinic participating in corrective therapy activities, they feel more optimistic about the future. The therapist must give the patient a plausible reason for taking part in the program. It may be of help to show him statistically how many patients with a diagnosis similar to his have improved to a varying extent from an invalid condition to successful ambulation. Motivating patients is frequently a matter of convincing them and encouraging them. Seldom should sympathy be given. It is a poor substitute for encouragement.

Third, there is the small group of patients who have considerable potential for rehabilitation but are reluctant to participate for some reason and must be motivated in a still different manner. The best approach, if at all possible, is to get the patient to come to the clinic. Have him watch the others taking part in the activity program. We create a friendly atmosphere, give him a cigarette (if he smokes) and talk things over with him. We strive to make him feel that he would be a welcome member of the group, and that he possibly can be rehabilitated. We find it valuable to emphasize to him that even though there are many patients receiving treatment, he will receive as much individual attention as he may need. This, of course, is only one method of meeting the man who needs treatment, but who is reluctant to cooperate.

Fourth, there is a very small group of patients who cannot be induced to accept treatment, even after as much as a week of effort. They just are not interested in being rehabilitated. They would just as soon remain as they are. However, it could be that the patient takes a dislike to the therapist. Often, a change of therapists is all that is needed to secure cooperation.

Once the patient is motivated to accept treatment, we must keep his morale high. The atmosphere in the clinic must be pleasant, and we must encourage him for even a little progress.

Maintenance Therapy

Another paper authored jointly by the Chief, Corrective Therapy, the PM&R Coordinator, and Chief, PM&R Service, at VA Center, Dayton, Ohio, under the title of, "Geriatric Maintenance Therapy Program," was published in Studies of the Aged and Aging, Volume VI, a document compiled by the Staff of the Committee on Labor and Public Welfare, United States Senate. This article relates the philosophy and the program which was launched by the corrective therapy section at the geriatric hospital of that station, and later expanded to include a broad activity program including many other hospital services. I would like to quote a few paragraphs from this excellent article. It expresses keen insight into a situation which is becoming one of the major concerns of the VA, and it offers a pattern of thought and action which I hope you will seriously consider applying at your own station.

Sometime ago the need for a physically sustaining type of treatment became apparent. Patients who had reached the conclusion of their definitive treatments and had a great deal of residual disability were often transferred to the geriatric hospital or domiciliary section where many deteriorated noticeably in the absence of directed exercise. With a small staff and a large potential load of this type superimposed on the regular therapy needs of the center, we sought a mass type of treatment that would provide for minimal patient needs and require minimal therapist time. We eventually developed a plan of maintenance therapy which has proven successful beyond our expectations.

Let us first define what we mean by maintenance therapy. It is a program of minimal activity required to maintain the physical condition of a patient with a poor prognosis for improvement at his maximum feasible level. This objective is usually established for the patient by the physiatrist under the following conditions: (1) After the patient has undergone intensive restorative therapy and has reached the point of maximum treatment benefit, and it appears likely that he cannot maintain his own physical condition; (2) Where a geriatric patient has deteriorated in the absence of physical medicine and rehabilitation therapy, and maintenance therapy is necessary to prevent contractures, disuse atrophy, decubiti, incontinence, weakness of musculature, and loss of self-care ability.

Patients often fail to maintain themselves physically because of mental confusion and disorientation. We believe that activity, physical and mental, retards mental deterioration. Our program, therefore, makes a twofold attack on the problem of maintenance: (1) It provides exercise to maintain the patient physically; (2) it retards mental deterioration so the patient retains his interest in self-activity. The primary objectives of the program are as follows:

1. To continue self-care ability as long as possible.
2. To delay the necessity for maximum nursing care.
3. To improve morale of geriatric patients.
4. To fill a distinct need for sustaining therapy by a mass-treatment technique, where possible. The mass approach enables us to do more maintenance therapy with present personnel.
5. To screen the large group of geriatric patients for those with the will and capacity to improve under intensive therapy.
6. To provide social outlets for patients of similar current social status in clinics.

Faced with the problem, and accepting the concept of maintenance therapy as the maximum feasible rehabilitation for certain individual patients, we established a recognized treatment objective—maintenance therapy. In each individual case, this objective is determined by the physiatrist when the need is apparent and the prospects of improvement are negligible.

The program was launched by the Corrective Therapy Section at the geriatric hospital. About 15 patients, who were receiving no physical medicine and rehabilitation treatments, were selected by the ward physician and physiatrist on the basis of their need for a sustaining type of therapy and self-care training. The patients are brought to the clinic from 10:45 to 11:45 daily, which is normally a slack period for the therapist, due to hospital routine. During this hour, the therapist trains and assists each patient to learn and carry on a specified activity. He assists and encourages each patient, moving from one to another as required. Parallel bars, wall pulleys, bicycle, punching bag, shoulder wheel, reciprocal overhead pulleys, etc., are used simultaneously as scheduled. Each patient uses one or more pieces of apparatus, getting a total of 5 to 20 minutes of exercise according to his tolerance.

Member detail men assist the therapist in getting the patients started on the equipment, moving them from one piece of equipment to another as scheduled, serving as ambulation escorts, moving them in and out of the clinic, and standing by to assist patients as required.

A second part of the corrective therapy maintenance program is to schedule patients with maintenance objectives throughout the day for individual work in Patrick and Brown Hospital clinics. After their routine is learned, they require little therapist attention and can use the equipment not then in use by other patients. Many patients can get good sustaining results by this means with a minimum of supervision.

Research

In regard to research, there have been many innovations in patient treatment; many special studies relating to techniques for different categories of patient disability; and many formalized research projects involving corrective therapy which have made valuable contributions in the field of physical medicine and rehabilitation. The cooperative VA study of chemotherapy in psychiatry presents many challenging opportunities for corrective therapists working with psychiatric patients, and I believe that you are cooperating alertly in this significant research enterprise.

Roland Technique

Since the Relaxation and Motivation Research project at VA Hospital, Chillicothe, is coming to an end, and since Paul Roland, corrective therapist who pioneered in this effort, has appeared on the program of previous conventions, you may be interested in extracts of the final evaluating report made by Doctors Appel and Hunt, psychologists of that station. They stated:

This was an exploratory five-month study at Veterans Administration Hospital, Chillicothe, Ohio. The report has attempted, in respect to all stated limitations of technique, logic and situation, to answer certain immediate questions regarding the Relaxation and Motivation program, sometimes known as the Paul Roland Technique; and to gather from that program, as well as from our circumscribed study of the chronic patient at this hospital, informative material that might be relevant to the development of more general principles of treatment relating to the treatment of all chronic patients. In addition, we have attempted to set forth, in brief general fashion, some future areas of research activity that this exploratory study has suggested.

Our immediate questions concerning the Relaxation and Motivation program were: Is this program a valuable one, is it a practical program, does it provide essentially a new method of treatment, does the program achieve its stated treatment aims, and would this program be of greatest benefit to this hospital used as a whole program or to be used only in respect to certain aspects of the program?

We are able, according to all the limitations of this study, to report that the Relaxation and Motivation program seemingly may be regarded as a valuable program, inasmuch as it offers a rather unique method for the treatment of chronic schizophrenic patients, and from our exploratory observations, the program appears to be practical. While the Relaxation and Motivation program certainly does use components of treatment that may be found in various other programs, this program does seem to have distinguishing differences from those other programs and from "total-push" programs as essentially a new program. There has been no attempt made by us, within this limited time, to explore this program in respect to any possible achievement of its long-term treatment aims; from our observations, it seems that this program does achieve its stated short-term treatment aims. Concerning any possible utilization of the Relaxation and Motivation program at this station, from a clinical-research viewpoint, it might seem advisable to utilize the program as a whole, not in any of its component parts. We believe that only continued research can suggest eliminations or additions to the present Relaxation and Motivation Program.

Effectiveness of Brief Maximal Exercise on Muscular Strength

For the past two years a cooperative, investigative project has been carried out in the corrective thrapy clinics at VA Center, Wadsworth, and VA Hospital, Kansas City, in connection with the University of Kansas Medical Center. This research project has dealt with the effectiveness of brief maximal exercise on muscular strength. A portion of this study has dealt with clinical conditions and a portion has been concerned with normal individuals.

The first phase of these research studies were formalized in a paper submitted at the Annual Session of the American Congress of Physical Medicine and Rehabilitation, September 9-14, 1956, in Atlantic City.[2] An exhibit prepared by the VA presenting the findings of this project was also presented at the medical meeting referred to and was awarded the highest honor receiving the gold medal.

The paper stated:

The effectiveness of exercise on the projection and maintenance of strength has been known since ancient times. The employment of exercise in medical conditions was quite empirical until the work of De Lorme which demonstrated the principles underlying the proper dosage of exercise and the differential application of these principles to achieve the qualities of strength, speed, coordination and endurance. No information was available, however, on the important considerations of frequency, duration and stress of exercise until the work of Hettinger and Muller. These authors demonstrated, on an experimental basis, that strength could be rapidly increased when near-maximal effort was exerted for brief periods of time. A single brief period of six seconds was as effective as multiple periods (up to 7/day) or longer periods (up to full exhaustion of the muscle). Further, the increased strength so gained could be retained for long periods with no special exercise.

Studies such as those mentioned, and many others in progress, can have a tremendous impact on exercise techniques not only in corrective therapy, but in the broad field of physical education. They indicate, too, the dynamic vitality and potential of this new profession.

Clinical Training

Two dates of historical significance in the professional development of corrective therapy are January 4, 1951, when the *Probational Requirements for Corrective Therapists* were revised to include a course in clinical practice; and February 1, 1952, when the first formalized affiliation was established between a hospital and a university for clinical training in cor-

[2]D. L. Rose, S. F. Radzyminski and R. R. Beatty, "The Effect of Brief Maximal Exercise on the Strength of the Quadriceps Femoris," *Archives of Physical Medicine and Rehabilitation*, March, 1957.

rective therapy. Prior to the latter date, we had physical education students in training for corrective therapy on a volunteer status. Since then, additional affiliations have been established between a total of 16 hospitals and 15 schools. During the past fiscal year, 45 students have taken advantage of this training opportunity.

I am convinced that the future development of corrective therapy is closely allied with our efforts to increase the number of such affiliations, and to provide high quality training programs for additional well trained personnel to fill the many vacancies which exist both within and outside the Veterans Administration. We should approach this matter, not with a selfish interest of recruitment for the VA, but with a consciousness of our responsibility in the medical rehabilitation movement in general. We have been a definite factor in the growing public acceptance of rehabilitation as a humanistic and economic process. We have facilities on a scale not equalled in any other organization or system of hospitals. We have physiatrists, corrective therapy personnel, and others with educational background, rehabilitation experience, professional competence and vision, who can indoctrinate and train the new generation of therapists better than any other group I know of. From a medical standpoint it is not ethically or morally fair to refrain from sharing these assets through training affiliations which will help to provide needed therapists for other rehabilitation programs throughout the country. Furthermore, the widespread public interest in rehabilitation is making an impact on the physical education programs in the public schools and colleges. Even though physical education students plan definitely to enter educational fields, the orientation and training received in the hospital setting will equip them to render better service to school children and college students because of their better appreciation of the physical and mental conditions suffered by many, which may be ameliorated by judicious exercise activities and sympathetic teacher attitudes.

We are a part of the medical family, and medicine shares its knowledge for the benefit of humanity.

Volunteers

The expanding opportunities for corrective therapy in patient treatment, coupled with the staff limitations resulting from budget and recruitment difficulty, makes the development of a volunteer program in corrective therapy of very real importance. In a recent study of this matter we find that 32 stations now use a total of 286 volunteers in this section; the numbers varying from one or two in some stations to as high as 30 in one station, 28 in another, and 66 in one center comprising two hospitals. In every station I have visited, where any considerable number of volunteers are used in corrective therapy, the reaction of both patients and staff to the service the volunteers render is one of satisfaction bordering on enthusiasm. It takes imagination, planning, and careful training to fit volunteers into the phases of the program where they can render appropriate service. It takes patience, consideration, and a genuine sense of appreciation for the time and effort volunteers spend to help in our veterans' treatment program. But it all pays off in broader scope of program; in an intangible plus which volunteers furnish by letting the patients know of the community interest in them; and in public relations value by having volunteers receive a first-hand knowledge of corrective therapy.

A few weeks ago I visited VA Hospital, Minneapolis, and spent some time in the corrective therapy clinic. It was a revelation to see several well trained volunteers, in appropriate uniforms, working seriously and efficiently in exercise activities in the very busy corrective therapy clinic, and to note the apparent patient satisfaction, and the fine rapport which existed. I asked a lot of questions and found out that Chester Nelson, Chief, Corrective Therapy, regards his volunteer training program as seriously as his staff in-service training. He *works* for his 28 fine volunteers, recruiting them, orienting them, and supervising them; And in return he has a dynamic treatment program. If any of you are skeptical on this point, talk to Mr. Nelson during this convention.

Classification

I have received many letters from Corrective Therapists inquiring about the new OT-MAT-ET Civil Service Standards, and in particular, asking about the authority for making them applicable to Corrective Therapy. This seems to be an appropriate occasion to point out certain significant factors in this very important Civil Service document.

The standards for OT-MAT-ET were printed in March, 1956, and reached the field sometime later. They had been in process a long time, but the final product was worth waiting for. I don't have accurate figures on the number of personnel who have benefited, gradewise, from the application of these standards, but it is a very impressive figure. Along with these Standards, a supplement was issued to the Exercise Therapist Series, GS-635-0, which reads:

> This gives official notice that all supervisory positions and nonsupervisory positions of service chief in this series will henceforth be evaluated on the basis of cross-series comparisons with counterpart positions described in the standards for the Occupational Therapist Series, GS-631-0,

and the supplemental information issued for this and other therapist series in physical medicine and rehabilitation programs, both issued in March 1956.

This release provides for consistency with the approach taken in the standards for the GS-631-0 Series wherein the program responsibilities of supervisory positions are evaluated in terms of such additional criteria as staff man-hours of therapeutic treatment and certain major and minor program elements.

There is not time to go into detail on this matter, but I do want to point out a development, which I believe represents a "first" in Civil Service thinking about classification of such positions. This is the identification of eight program elements as a means of *qualitative* evaluation of chief therapist positions. They are:

1. Programming for mixed categories of patients, i.e., general medical and surgical, neuropsychiatric, or tuberculous, in addition to the primary diagnostic category.

2. Programming for an officially designated specialty center, such as a center for rehabilitation, aphasia, paraplegia, blind rehabilitation, geriatrics, etc.

3. Providing an approved training program for students in a particular therapy field, as clinical practice for students in corrective therapy. Naturally, the training program would affect measurably only the supervising therapist responsible for the specialty training. It does not include in-service training.

4. Participating in an approved research program, such as drug therapy, lobotomy, or to measure the effectiveness of a new therapeutic approach.

5. Working with a Physical Medicine and Rehabilitation Ward.

6. Working without the supervision of a full-time medical rehabilitation specialist.

7. Serving as a regular member of medical boards, such as the Medical Rehabilitation Board, which convenes at frequent intervals, and where the chief therapist makes an important contribution to the Board considerations.

8. Programming for a combined facility such as a hospital and clinic or hospital and domiciliary program, where the chief therapist is responsible for administering a therapy program which serves separate and distinct organizational entities, and the therapy program is characterized by a difference in emphasis and orientation.

The first and last of these qualitative elements are interpreted to have grade determining weight when a substantial portion of the treatment program (that is, 25% of the staff man hours) is devoted to patients or domiciliary members in other than the primary group.

Elements 1 through 4 are considered to be major factors, while 5 through 8 are minor factors for classification purposes in the qualitative evaluation of a therapy program. Two minor program elements are equivalent to one major program element. The standards provide that, where the above program elements are found, the man-hour requirements and organizational complexity for a specific grade level of chief therapist are relaxed subject to the following limitations:

(1) Up to 25% of the man-hours required may be waived where three major program elements or the equivalent exist.

(2) Where fewer than three major elements or the equivalent exist, a proportional number of man-hours may be waived.

It will be noted that in a number of instances the qualifying phrase, "or equivalent," is used. This is a frank recognition that the eight factors identified do not exclude others which may exist but have not been stated, or which occur in so few hospitals that they might not have broad application. It is highly possible that additional qualitative factors presently in existence or which will come into prominence in the future will become so significant that they will be added for nationwide effect.

Another important factor in these standards is that the time spent in therapeutic activities for patients by aides and WOC volunteers are considered appropriate for inclusion in the scope of the therapy program in the evaluation of chief positions. In addition, the man-hours of clinical trainees are to be counted to the extent that they augment the therapy of regular staff therapists. Excluded, of course, would be the periods devoted to classroom lectures, orientation tours, conferences, etc.

There is a challenge, here, for corrective therapists, and others, to examine the elements of deeper professional significance in their programs, and to point out to personnel officials in Central Office through local channels, other quality factors which will inevitably develop in this dynamic treatment program.

I hope you see the relationship of this aspect of classification procedure to the remarks I made at the beginning of this paper. Now, the corrective therapist's concern for matters requiring deeper professional insight—such matters as clinical training, research, personal interest in patient motivation, participation in the Medical Rehabilitation Board proceedings, special programs, and use of volunteers—have a tangible effect in the measurement of scope of program,

Cont'd on Page 160

A DEVICE TO ASSIST IN STANDING SEVERELY DISABLED PATIENTS

FRANK S. DEYOE, B.S.*

A device to support patients in the standing position has been developed. It is easily attached anywhere between parallel walking bars, or the vertical pipes of these bars, and provides a safe, firm support for all patients who need assistance to maintain the erect position because of severe paralysis or spasm resulting from various neurological conditions. It is just as easily removed.

Two Balkan Frame pipe-clamps are attached by means of swivels to plugs threaded into each end of a 1-inch pipe of sufficient length to extend from one parallel bar to the other. The pipe is built up with felt padding to a diameter of 3½ inches and covered with soft leather (circumference of approximately 12 inches.)

When a patient has been assisted to the erect position, the support is clamped firmly in place between the bars so the patient's buttocks rest against it. This provides support which enables the patient to maintain balance with minimal use of the arms. The verticality of his position can be varied by the position in which the feet are placed. (Fig.1.)

The advantages of this support are several. It provides a constant, uniform support for the hips without the sag which is present when using a strap. The support cannot slip, which with its firmness gives the patient a feeling of confidence. The patience is able to slide his hips from side to side if he has minimal control of the trunk; otherwise, he may be fastened in place with straps. (Fig. 2.) The support is usually placed in a position which enables the patient to use the vertical and overhead horizontal bars for developing or controlling the trunk by providing additional support for the upper extremities, and for exercising the arms and shoulders. Using temporary knee cages (sleeper braces) the support has enabled us to stand patients very early with full weight-bearing and to evaluate their need for permanent bracing. It has been used successfully with patients with severe paralysis from cervical cord lesions, poliomyelitis, multiple sclerosis and other neurological conditions. Because of the stability of this support it has proved useful in stretching flexor spasms of the hips in paraplegic patients. In standing position they are able to rest their buttocks against the support and actively force their trunks backward, providing a stretch on the hip flexor muscle groups. The patients are able to control the amount of stretch obtained, and it is

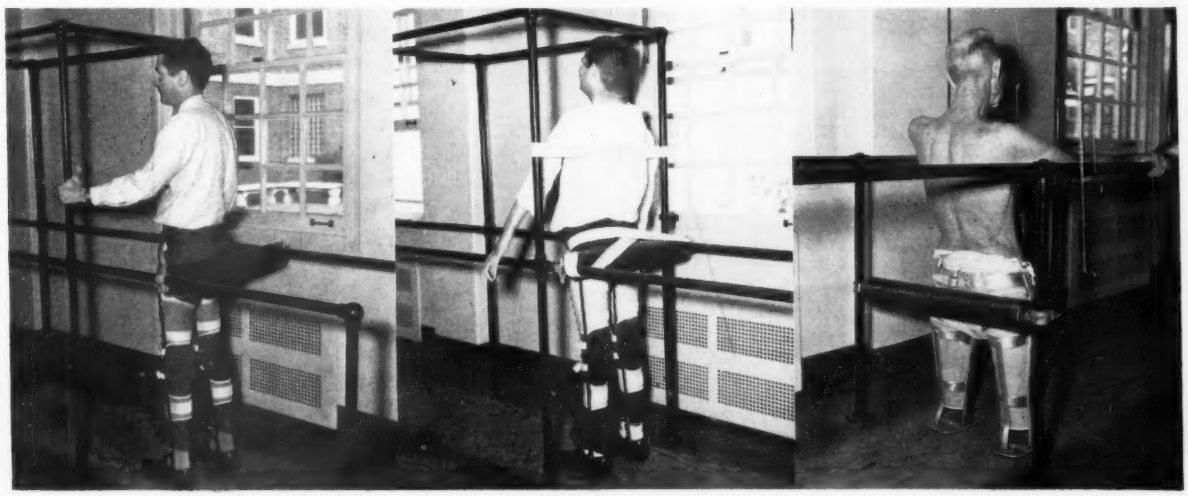

Figure 1 **Figure 2** **Figure 3**

Fig. 1—Device in position to provide moderate support for patient with partial paraplegia. Fig. 2— Device placed so additional support can be used to assist severely paralyzed poliomyelities patient. Fig. 3 — Position of device for stretching hip flexion contractures.

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considerably easier for them to attain the proper standing posture than if the hips are not supported. The fact that the device can be firmly attached to the vertical bars permits it to be fastened low enough so that bilateral amputees who use buckets for standing can utilize it in a similar manner to stretch hip flexor contractures. (Fig. 3.)

Summary

A device to assist in standing severely disabled patients is described. Use of this device has enabled us to stand patients with considerable ease even though they have severe paralysis or spasm. It is possible to leave the patient in the standing position without the constant supervision of a therapist. Its firmness and stability increase the patient's confidence and it permits patients to actively stretch spasms or contractures of the hip flexors.

PHYSICAL FITNESS (Cont'd from Page 149)

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CORRECTIVE THREAPY (Cont'd from Page 153)

with corresponding remunerative value.

In conclusion, may I pay tribute to the vision and leadership of my predecessor, Dr. John Eisele Davis, who has, with your pioneering efforts in the field, laid such a firm foundation for this new profession. Dr. Davis is one of those rare individuals whom you consider it a privilege to work with. But, I doubt if even he, at the beginning of this decade, sensed the potential in rehabilitation treatment which has been realized in corrective therapy clinics all over the country. And I suspect that neither of us is capable of visualizing and completely appreciating the future impact of corrective therapy in the physical medicine and rehabilitation programs of the future. I consider it an honor to have succeeded John, and a privilege to be working with you. May the end of the next decade far exceed our fondest expectations.

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difference other than a chance difference in the population statistics, between the initial and final evaluations. The obtained value of "t" was 4.10, indicating that the difference between the means is significant at the .01 level of confidence[11]. The null hypothesis is therefore rejected in this instance, since the resulting differences would arise due to chance only one time in 100, thus indicating a true difference between the pre and post evaluations due to the treatment effect (change of sockets on the artificial limbs).

In addition, examination of the average scores for each subject presented in Table I, shows that eight of the nine cases increased their balance scores from 0.25 to 5.00. Only one of the subjects (Subject 1) showed no improvement in balance and not one demonstrated a decreased average score.

In consideration of the fact that all prosthetic and test variables were controlled, with the exception of the change from a conventional wood socket to the celastic soft socket, and in consideration of the reported reliability of the Beam-Walking Test as a measure of dynamic stability the above results indicate improvement in dynamic balance as a result of use of the soft socket. It is probable that this improvement was the result of improved closer socket fit as well as the soft lining, resulting in the relief of undue pressures on such areas of the stump as the sub-patella ligament, the tibial tubercle and the distal anterior tibia. With the relief of such pressures, the amputee was able to apply full weight as rapidly as necessary, thus providing a steadiness that was not possible on the conventional socket.

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[11]Guilford, J. P., *Fundamental Statistics in Psychology and Education*, McGraw-Hill Book Company, Incorporated, New York 1950, Table D., p. 609.

CONVENTION NOTES

BUSINESS MEETINGS

(The following represents a summary of business conducted by the Executive Board, Board of Governors and General Assembly of the Association for Physical and Mental Rehabilitation at the annual conference held at the Conrad Hilton Hotel, Chicago, Ill., July 7-12, 1957. The summary was condensed from the official minutes of these meetings.)

Proposed Plan for Organization of all Rehabilitation Personnel

At a meeting held on July 6 of the Board of Governors of the Association for Physical and Mental Rehabilitation, American Association of Rehabilitation Therapists and Association of Medical Rehabilitation Directors and Coordinators, Dr. Louis B. Newman, Chief, PM&RS, VA Research Hospital, Chicago proposed that the three organizations take steps to form a new organization of all personnel in rehabilitation; such an organization to be patterned after the structural framework of the American Medical Association. Under this plan, overall administration would be carried out by a board comprising a president, vice president, secretary, treasurer, members of the Representative assembly and committees. The following branches of Physical Medicine and Rehabilitation would each be represented as separate sections of this "Association of Medical Rehabilitation Personnel": Corrective Therapy, Manual Arts Therapy, Educational Therapy, Physical Therapy, Occupational Therapy, Speech Therapy, Audiology, and others. Each section would have a chairman, vice chairman plus other officers, and each section would elect delegates to carry out the business of the parent organization.

At a joint meeting of the Board of Governors of the aforementioned organizations held on July 7, Arthur Landy, president of APMR read the following statement, prepared by a special committee consisting of Karl Klein, Kenneth Dening, and Willis Denny and approved by the Board of Governors of the APMR: "Be it resolved as evidence of its good faith and intentions in the interest of improving patient treatment through the organization of a coordinating body such as a council of medical rehabilitation personnel, the Association for Physical and Mental Rehabilitation will appoint one or more representatives to meet with delegates of any other interested group to explore the practicality of creating such a mutual organization. Be it further resolved: (1) That representatives of the APMR, AART and AMRDC hold a preliminary meeting before the close of this convention to initiate plans and the approach to group organization; (2) That plans be formulated to contact all other qualified professional organizations — such qualifications to be subject to approval of the governing body of the proposed council; (3) That each of

the three groups send at least one representative to a coordinating meeting, to be held within one year from this date, with other interested organizations in planning the forward action of the council." Edgar Plott, president of AART, and Vincent Circhio, president-elect of AMRDC, presented resolutions supporting the above.

Action on Proposed Changes in Constitution and By-Laws, APMR.

A considerable number of proposed changes in the APMR Constitution and By-Laws were contained in the report of Willis Denny, chairman of the constitution committee. Action taken on these proposals was as follows:

Constitutional Amendments Approved

1) Article IV, Sect. 1 (Government) to read: "The official business of the Association shall be conducted by the Board of Governors, comprised of the Executive Board, the Representative Assembly, and a *representative* of the Past Presidents Council, each constituted as hereinafter provided."
2) Article IV, Sect. 3 to read: "The Representative Assembly shall be composed of representatives duly elected by the active members of the chapters of the Association in good standing at both national and chapter level." (This amendment ratified by the General Assembly.)
3) Article IV, Sect. 4 (new) to read: "The Past Presidents Council shall be composed of each past president of the Association provided such individual is an Active or Life member of the Association. The immediate Past President shall represent the council on the Board of Governors as a member of the Executive Board as provided in Section 2 of this Article. The Council shall act in an advisory capacity to the President when called up." (Ratified by General Assembly.)

Constitutional Amendments Disapproved

1) Proposal to delete from Article III (Membership) the term, "sustaining."

Changes in the By-Laws Approved

1) Article I, Sect. 2 to read: "Possess a Master's Degree in Physical Education with a major emphasis in physical education and rehabilitation, which includes an approved course of a minimum of 250 hours of clinical training."
2) Article I, Sect. 2a1 to read: "Be a graduate of an accredited college or university with a major in Physical Education which included an approved course of a minimum of 250 hours of clinical training or six months of full-time acceptable experience in a program of Physical Rehabilitation, Mental Rehabilitation, or Reconditioning under the direction of a physician, in lieu of such clinical training."
3) Article I, Sect. 2g, Part 3 to read: "A Life Member shall be accorded the same privileges as an Active Member."
4) Article I, Sect. 4e to read: "Any Active or Life Member in good standing shall have his name listed on a current roster of qualified Active and Life members of the Association."
5) Article I, Sect. 4i to read: "Life and Honorary members shall be exempt from all dues and fees."
6) Article I, Sect. 6a to read: "Any active member failing to renew his membership within sixty (60) days from date of expiration (July 1 annually) becomes delinquent and shall pay the penalty of $1.00 plus current dues, provided his membership is renewed within six months from date of expiration."
7) Article I, Sect. 6b to read: "Any Active Member whose membership is not renewed within six months from the date of expiration loses his membership and must apply as a new applicant for membership and satisfy all requirements at the time of his new application. Such an applicant shall pay his current dues for active membership plus a reinstatement fee of $5.00."
8) Article I, Sect. 6d to read: "Professional and Associate Members whose membership is not renewed within sixty days from date of expiration become delinquent and must make application as a new applicant to the chairman of the membership committee."
9) Article IV, Sect. 1a to read: "The Representative Assembly shall be composed of representatives duly elected by the chapters of the Association at their annual meeting and in the manner provided by the chapter constitution. The results of said election will be forwarded by the chapter secretary to the credentials committee chairman at least thirty (30) days prior to the Association's annual meeting for review and approval as stipulated in paragraph (f) below."
10) Article IV, Sect. 1c to read: "Each chapter shall elect one (1) representative for every twenty-five (25) active members or major portion thereof; chapters having twenty-four (24) or less active members shall elect one (1) representative. Elected representatives shall be active members at both national and chapter levels for two (2) consecutive years prior to election and must consent to accept the office in good faith and perform such duties as are stipulated within the Constitution and By-Laws, and as may be assigned by the Speaker of the Representative Assembly. The chapter president will certify in writing to the credential committee chairman that the representatives

were elected under the above provisions."

11) Article IV, Sect. 1d to read: "Representatives elected for and shall serve for a term of two (2) years. They shall take office at the annual meeting of the Association following their election and subsequent approval by the Credentials Committee."

12) Article IV, Sect. 1g to read: "Active Members transferring from one chapter to another must notify in writing the secretaries of each chapter concerned."

13) Article VI, Sect. 1 to read: "A nominating committee composed of a chairman and four (4) members all of whom shall be members of the Representative Assembly, appointed from separate areas and who shall present at the annual meeting a slate of two (2) candidates for each office to be filled with the exception of the office of President-Elect and Director of Publications. All candidates must, at the time of the election, have been an Active or Life Member of the Association for a minimum of two (2) consecutive years."

14) Article VI, Sect. 7 to read: "At the last business meeting of the next annual meeting following their election, the President-Elect and the duly elected and certified members of the Representative Assembly shall assume and serve until the corresponding period of the following annual meeting or until their successors assume office."

15) Article IX, Sect. 4e to read: "Assist the President in conducting the election of officers at the annual meeting."

16) Article X, Sect. 9d to read: "Receive all applications for affiliation as an approved chapter, together with necessary fees, and determine the compliance of the organization with the requirements for affiliation."

17) Article X, Sect. 1 to read: "The Association authorizes and encourages the formation of state and/or area chapters which may become constituent organizations participating through elected representatives in the government of the Association."

18) Article X, Sect. 3f (New) to read: "An initial fee of ten dollars ($10.00) will accompany application for charter. A chapter fee of five dollars ($5.00) will be due and payable annually on July 1st."

19) Article X, Sect. 4 to be added as Sect. 4a: "The chapters must meet at least once annually, not less than thirty (30) days nor more than ninety (90) days preceding the Annual Meeting of the Association for the purpose of electing officers or Representative Assembly members and conducting such business as may be referred to it by its members and/or the Association."

20) Article X, Sect. 4b (New) to read: "All chapter members in good standing shall be equally privileged to attend all chapter meetings and take part in all proceedings, but the right to vote on business pertaining to the Association (resolutions, amendments, etc.) shall be limited to those Active Members who are also Active Members of the Association."

Future Conventions

The Board of Governors, APMR, adopted a resolution which in effect committed the association to the tri-organizational plan (APMR, AART, AMRDC) of Conferences for the next three years. The resolution also contained a clause whereby chairmanship of the conferences would rotate among the three organizations with the AART providing the chairman for the 1958 meeting which will be held in Atlantic City, N. J. Action on selection of a site for the 1959 conference was deferred pending agreement by the three organizations.

Election of Officers

Election by the Board of Governors for the office of President-Elect was held July 8. Nominations were called for from the floor, and Willis Denny of Dublin, Ga. was nominated by Robert McIntyre. Kenneth Dening seconded the nomination. Leo Berner nominated Norman Tenner of Chicago who declined. There being no further nominations, Mr. Denny was elected without contest.

The General Assembly election was held on July 9. M. Raymond Robinson read the report of the Nominating Committee which named the following candidates for office: For First Vice President, Eleanor Stone and Karl K. Klein; for Second Vice President, Charles Castle and Charles Willhite; for Third Vice President, Norman Tenner and Ernest Wilbur; for Secretary, Lester P. Burrowes and Vincent McGrath; for Treasurer, Raymond Heaslet. (Willis Denny's name withdrawn due to previous election)

Nominations were called for from the floor. Karl K. Klein requested that his name be withdrawn for the office of First Vice President. There being no further nominations for this office, Mrs. Stone was elected unanimously. For the office of Second Vice President, Philip J. Rasch was nominated by Harold Brenner. Karl K. Klein was nominated by Eleanor Stone but refused. Charles Castle was then elected by the Assembly. For the Office of Third Vice President, Robert Arlen and Philip J. Rasch were nominated from the floor, and Norman Tenner requested that his name be withdrawn. Philip J. Rasch was then elected by majority vote. For the office of Treasurer, no nominations were made to replace that of Willis Denny, and Raymond Heaslet was elected unopposed.

For the office of Secretary, Vincent McGrath withdrew his name, and Lester Burrowes was elected unanimously.

CLINICAL SESSIONS

(The following notes cover the highlights of the General Sessions and the APMR Section Meeting held during the First Tri-Organizational Conference, Conrad Hilton Hotel, Chicago, July 7-12, 1957.)

The Conference opened officially at 1:30 p.m. on July 8 when delegates and guests of the three organizations were called to order by the conference co-chairman, Norman Tenner, Chief, Corrective Therapy, VA Research Hospital, Chicago. After the invocation, Richard J. Daley, Mayor of the City of Chicago, gave a welcoming address in which he praised rehabilitation "as a great word and a great challenge." Responses were given by the three association's presidents: Charles Armon for the Association of Medical Rehabilitation Directors and Coordinators; Arthur Landy for the Association for Physical and Mental Rehabilitation and Edgar Plott for the American Association of Rehabilitation Therapists. Dr. Richard H. Young, Dean of the Northwestern University Medical School, acted as chairman for the remainder of the afternoon and introduced the first speaker, Gen. Melvin J. Maas, Chairman of the President's Committee on Employment of the Physically Handicapped.

Gen. Maas, who is himself disabled due to blindness, spoke on the conference theme, "Rehabilitation —Converting a National Problem to a National Resource." In his address, the General emphasized the economic importance of rehabilitation. "A rehabilitated person returns ten dollars to the government through taxes for every dollar that is spent to rehabilitate him," said the speaker. Gen. Maas stated that rehabilitated persons had earned $140,000,000 last year and were thus removed from public assistance. He emphasized that in America, "There should be no discrimination of employment because of race, creed, religion or physical condition as long as one has the ability to do the job."

"Some Viewpoints on Rehabilitation as Seen by the Employer" were offered by John Convery of the Industrial Relations Department of the National Association of Manufacturers. Mr. Convery stressed the fact that the handicapped as well as the employer must be sold as to the possibilities of employment. "The employer is interested in getting the best return for his dollar, and the handicapped has proved his worth," said Mr. Convery. The speaker concluded that whereas the number of jobs and standards of living are on the increase, "laboring" jobs are declining while automation is on the rise. These changes are all to the advantage of the handicapped, according to Mr. Convery.

The final speaker of the day was Dr. John Hood, VA Area Medical Director of Columbus, Ohio. Dr. Hood paid tribute to the field of medicine for adding numerous therapists and specialists to form a team for the physical and mental rehabilitation of the patient.

The second General Session was held on the morning of July 9, and Dr. John F. Sheehan, Dean, Stritch School of Medicine, Loyola University, acted as chairman. In his remarks, Dean Sheehan spoke of the transition in medicine from one single objective of treatment to the three objectives of treatment, prevention, and rehabilitation. Dr. Louis B. Newman, Chief, PM&RS, VA Research Hospital, Chicago, was then introduced as moderator of a panel of representatives of organizations serving the handicapped. A total of eight organizations were represented on the panel: The Arthritis and Rheumatism Foundation, National Tuberculosis Association, American Heart Association, Multiple Sclerosis Foundation, Association for Mental Health, American Foundation for the Blind, National Foundation for Infantile Paralysis and the National Epilepsy League. Among the facts brought out by panel members were the following:

1. There are approximately 11 million arthritics and 261 arthritis clinics in the United States today.
2. The incidence of tuberculosis is about 20 times greater among alcoholics than among the rest of the population.
3. One-third of the deaths of persons between 30 and 54 years of age are due to heart disease.
4. There are approximately 350,000 cases of multiple sclerosis in the U.S. today.
5. 10,000 veteran psychiatric patients were retained in VA Hospitals because families and communities would not accept them.
6. Blind organizations raise about 50% of their needed income through the manufacture and sale of "gadgets" for the blind.
7. About 80,000 polio patients are being aided by the National Foundation.

The first APMR Section Meeting was held on the afternoon of July 9. John E. Davis, Sc.D., discussed "Professional Prospectus for Corrective Therapists." Dr. Davis discussed philosophical aspects of therapy in the general medical and surgical and psychiatric environments, stressing important trends

and professional growth in CT. Charles R. Kovacic, Ph.D. next presented a paper on "Adapted Physical Education as Therapy" in which he pointed out how a specialized physical education program for the handicapped could develop physical, social and emotional improvements. John Murphy, CCT, of Chillicothe, Ohio discussed methods of informing the public of the work which is being accomplished in CT. One method is by the use of slides and movies, and Mr. Murphy, as an example, showed the audience a slide presentation depicting the work of CT at the Chillicothe hospital. The showing of the slides was synchronized with narration from a tape recorder, making for a very effective presentation. Leslie M. Root, Chief, CT, VAC, Wood, Wisc., was the next speaker, on the subject of "Rehabilitation Camping." Mr. Root, who acts as director of Camp American Legion in Wisconsin, presented a film made at the camp showing facilities and the therapeutic program in operation. This camp is maintained and operated by the local American Legion for veterans of the State of Wisconsin who are disabled. The camp offers a varity of recreational activities as well as exercise, ambulation, and prosthetic training under the supervision of a corrective therapist. A formal type of CT program for regressed NP patients was described by Paul Conte, CCT, of Downey, Ill., who uses calisthenics, gymnastics and other activities to transfer his group into a physical education class. The final speaker of the day was Joseph J. Phillips, Chief CT, VAC, Wadsworth, Kansas, who discussed the contribution of CT to research on brief maximal exercise. Mr. Phillips assisted in gathering data which was published recently.*

The second APMR General Session was held on the morning of July 10 with Vice Admiral Ross T. McIntyre, Surgeon General, U.S. Navy (Ret.) as featured speaker on the topic, "The Place of the Surgeon in Corrective Therapy." Admiral McIntyre stated that reconstruction surgery is an important phase of rehabilitation in which the corrective therapist must play a specific role for total treatment of the patient. In regard to the aged, he pointed out that by the year 2000 there will be as many people not employed as there are employed if we are not prepared to handle geriatric problems. "Observations of Specific Exercises and their Stabilizing Effects on Chronic Shoulder Dislocations" were offered by Karl K. Klein of the University of Texas. Mr. Klein stated that shoulder dislocations are listed second in incidence to knee injuries among football players. In his study, the speaker concluded that re-occurrence of dislocations can almost be eliminated if proper reconditioning exercises are performed. A discussion of "Curriculum Problems in a University Corrective Therapy Program" was then presented by Robert Shelton of the University of Illinois. Mr. Shelton noted the general curriculum trends from those of practability to those of pure scholarship and pointed out problems of job placement, salary scales and the relationship of CT to the medical and educational field. The final speaker of the session was Joseph Van Schoick, Chief, Corrective Therapy, Veterans Administration. Mr. Van Schoick, described the growth and development of the adapted physical education and corrective therapy programs during the past ten years and pointed out areas in which he felt that further progress could be made.

The third General Session, held in the afternoon of July 10 had Dr. Lowell T. Coggeshall, Dean of the University of Chicago Medical School, as chairman. He introduced E. B. Whitten, Executive Director of the National Rehabilitation Association, who acted as moderator of a panel on "Professional Relations in Rehabilitation." The panel consisted of Leonard Pearson, Ph.D., Nathan Glaser, Dr. Arthur Rodriguez and George Walker, and their discussion revolved around problems of communication, a delineation of areas of responsibility and authority and the role of personnel during various phases of patient care and rehabilitation. Dr. Edmund Jacobson then spoke on the use and potentialities of his methods of relaxation, using slides to illustrate his lecture. Dr. Jacobson's thesis is that the alleviation of pain is one of the first concerns of anyone treating patients or in rehabilitating them. In the Jacobson method, pain is considered to be a reflex brought about through tension which can be alleviated when the patient is taught true relaxation. The final speaker of the day was Dr. William Kroger who defined, described, and gave examples of methods of treating psychosomatic disorders by hypnotherapy.

The fifth General Session on July 11 had Dr. Einar Andreassen, VA Area Medical Director of St. Paul, Minn., as chairman. William H. Key, Ph.D. read a paper written by Dr. Ralph Crawshaw of the Menninger Foundation on the subject of "Present Day Adjunctive Therapy in a Hospital Setting." According to Dr. Crawshaw the three cardinal requisites of a good therapist are: skill in the individual's particular area, the ability to relate and communicate with patients and to recognize those patients with whom he could not relate, and professional dedication. "Trends in Physical Medicine and Rehabilitation" were outlined by Dr. A. B. C. Knudson, Director,

*D. L. Rose, S. F. Radzyminski and R. R. Beatty, "The Effect of Brief Maximal Exercise on the Strength of the Quadriceps Femoris," *Archives of Physical Medicine and Rehabilitation*, March, 1957.

PM&RS, Veterans Administration. Dr. Knudson stated that he was opposed to the practice of grouping all therapies into the category of "adjunctive," and that he believed each section in PM&R was entitled to its own identity. He then discussed what he believed would be the trend in the future with an emphasis on working with the geriatric and chronically ill. A discussion of how a physical fitness program can contribute to the middle years of life was presented by Thomas K. Cureton, Ph.D. of the University of Illinois. Complete text of this talk appears elsewhere in this issue of the *Journal*. The final speaker of this session was Dr. Charles LeTourneau who discussed "Medical-Legal Problems in Rehabilitation."

At the APMR section meeting held on the afternoon of July 11, Cecil Morgan, Ph.D. of Springfield College spoke on "Integration of University Training and Practice in Corrective Therapy." Dr. Morgan gave a historical review of the corrective therapy and adapted physical education program at Springfield, emphasizing that the program is maintained at the graduate level after the student has completed a four-year basic course in physical education. The remainder of the program was devoted to seminar groups which presented problems in three phases of corrective therapy; general medical and surgical, psychiatric and neurological.

HJB

"From Other Journals"

Unless noted otherwise, all abstracts have been prepared by Philip J. Rasch, Ph.D.

JOHN C. ROSE, The Valsalva Maneuver. *GP*, XVI: 80-81, July, 1957.

The Valsalva maneuver is an expiratory effort against a closed airway. At the onset of straining there is a brief rise in systolic and diastolic pressures, due to sudden squeezing of blood out of the thoracic viscera. This is followed by a precipitous fall to low levels, resulting from reduction in cardiac output following marked impairment of venous return to the heart. Before the airway pressure is released, a rise in pressure begins, due to reflex vasoconstriction. When the strain is released there is an immediate rise in systolic and diastolic pressures to levels above the control values. This is due to the fact that when the expiratory effort is released, a further vasoconstriction is mediated by the sympathetic nervous system. During this "overshoot" the pulse pressure increases. Bradycardia follows, and then the blood pressure returns to control levels. Abolition of the overshoot by sympathetic inibition by sympathectomy or drugs provides a simple test of their effectiveness. Other abnormal responses may be used to study heart conditions.

GEORGE M. NAIMARK, "The 'Growth Spectrum': A Simplified Chart for Assessment of Growth." *Journal of Pediatrics*, 50:586-590, May, 1957.

The classic technique for evaluating the nutritional and developmental status of a child utilizes chronologic measurements of body weight and height. The practice of comparing children according to *average* criteria is physiologically invalid and often psychologically detrimental. It must be determined whether the rate of growth conforms to the developmental pattern of the child's individual physique. The "Growth Spectrum" has been devised to provide a mechanism for the establishment of a growth pattern as compared to the rest of the population of the same age and sex. It enables one to estimate individual physique and to visualize deviations from specific patterns of growth. An estimate of adult height and weight can be made at any age.

STANLEY COBB, "Monism and Psychosomatic Medicine." *Psychosomatic Medicine*, XIX:177-178, May-June, 1957.

"The ultimate goal of science is a universal monism," but it seems difficult to accept the view that there is no basic difference between physical and psychological phenomena. The psychological is merely more complex. "Mind" is an abstraction in the same sense that "circulation" is an abstraction. Mind is the integration of the nerve cells and nuclei of the brain. Sensory stimuli arouse responses channelled to a motor outlet to cause behavior. With a conviction of the unity of the organism and a working theory of mind, one can investigate psychosomatic problems. Health and disease are conceived as reactions of the human organism to a complex internal and external environment. This is the holistic and ecological point of view of modern medicine.

N. T. KARKI, "The Urinary Excretion of Noradrenaline and Adrenaline in Different Age Groups, Its Diurnal Variation and the Effect of Muscular Work on It." *Acta Physiologia Scandinavica, Volume* 39, *Supplementum* 132, 1956.

The function of the sympathetic nervous sytem appears to be based on a chemical mediator which is liberated at the nerve endings and activates the receptor system. This mediator is composed of adrenaline and noradrenaline, both of which are hormones of the suprarenal medulla, and may be quantitatively estimated in the urine. No statistically significant differences in the secretion of adrenaline per kg. of bodyweight were established between different age groups and the sexes. The mean noradrenaline output was greatest for both sexes between the ages of 7 and 16. No differences between the sexes were observed. Psychic stress may increase the adrenalin content of urine. Middle-distance runners showed increased excretion of adrenaline and noradrenaline during practice. Marathon runners and ski racers excreted high amounts of both substances during races. In woodcutting competition the amounts excreted were very much increased. No decrease in the amounts secreted was noted as a result of training, but this may have been due to the fact the athletes increased their exertions as their physical condition improved. Metabolic factors probably influence the secretion of adrenaline during muscular exertion. An oxygen deficiency as the result of exhausting work may also stimulate the suprarenal medulla.

RONALD J. DORRIS and ALBERT J. SHINKARD "Physical Activity: Performance and Attitudes of a Group of Obese Women." *American Journal of the Medical Sciences*, 233:622-628, June 1957.

Investigations in the field of obesity has focused on the caloric intake of obese persons. Recently, the role of caloric expenditure has received increasing attention. Pedometer measurements of a group of obese women indicated that they walked less than half as much as their non-obese controls. The obese women showed a passive acceptance of feelings of despondency and boredom, and lessened ability to achieve social goals. Many obese persons show distortions of judgment regarding the factors which contribute most heavily to their obesity. A moderate increase in physical activity might favorably alter the caloric balance.

H. L. TAYLOR, E. R. BUSKIRK, J. BROZEK, J. T. ANDERSON and F.G RANDE, "Performance Capacity and Effects of Caloric Restriction With Hard Physical Work on Young Men." *Journal of Applied Physiology,* 10:421-429, May, 1957.

In prolonged semi-starvation, the maximal oxygen intake of young men sustained a large decline, roughly in proportion to the body height. At some point between a 10 and a 16% weight loss, a rapid deterioration of the maximum oxygen intake sets in. Ability to perform aerobic work was well maintained up to the 10% weight loss. Beyond this point cardiovascular inefficiency and increasing anemia are a limiting factor in the capacity to move oxygen to the muscles. Declines in both strength and speed of muscular movement occur. However, the rate of weight loss is also important, and there may be special tasks in which a real decrement in performance would be observed before weight loss reached the 10% level.

"Mystery of the Red Tide." *Sea Frontiers,* 3:21-31, March, 1957.

In years past the west coast of Florida has been plagued with a red tide which killed millions of fish and caused physician's offices to be swamped with patients suffering from respiratory ailments. This resulted from a prodigious increase in the numbers of a dinoflagellate called *gymnodinium brevis.* These secrete a slimy substance which gives the water the consistency of thin syrup. Similar organisms are responsible for mussel poisoning on the California coast during the summer. Heavy concentrations of these organisms may become poisonous to fish. When thrown into the air by breaking waves, they remain in suspension for some time and cause sore throats, sneezing and coughing. Within a few days the concentration of this organism becomes so heavy that it brings about their death by overcrowding. The sudden growth of these organisms may be related to food sources being washed into the ocean by heavy rains. Other microscopic plant life is known to have been responsible for brown, red or green areas in the sea.

EDWIN P. ALYEA and ALEX W. BOONE, "Urinary Findings Resulting from Nontraumatic Exercise." *Southern Medical Journal,* 50:905-910, July, 1957.

In boxing, football and certain other sports it is not possible to separate the effect of exercise on the kidneys from the effects of physical renal trauma. Rowing can in no way involve renal trauma. In a study of Princeton crew men, none had albumin in the urine before exercise, but a large percentage showed it following exercise. The more severe the exercise, the higher the abnormal findings in the urine. Hyaline and granular casts and red blood cells were also found in the urine after exercise. The actual cause for these urinary findings is unknown. Perhaps during exercise some of the glomeruli cease to function. When the flow and filtration is re-established after exercise, the albumin appears in the filtrates of these damaged glomeruli. We should hesitate to recommend severe exercise to anyone showing evidence of damaged kidneys.

MAURICE BAKALEINIK, "Shock: Advances in the Interpretation of Pathologic Physiology; Emergency Treatment." *Journal Lancet,* 77:204-208, June, 1957.

Shock is caused by a disparity between the circulating blood volume and the vascular capacity. The blood pressure may fall due to a decrease in peripheral resistance or a decrease in cardiac output. Neurogenic shock develops as a loss of central or peripheral nervous control of the peripheral resistance. It may be caused by nervous impulses originating from tissue damage, emotional factors, toxic agents, abrupt alterations in position, or other factors resulting in a dilatation of the vascular system. Secondary shock results from a reduction in the circulating volume through hemorrhage, burns, trauma, dehydration, excessive vomiting, or other causes. It is usually necessary for a patient to lose 25 to 40 percent of the total blood volume, but men are more susceptible than women. Neurogenic shock is treated by removing the cause. Oxygen is administered and the patient's head is lowered 10-15 degrees. In secondary shock the blood volume must be restored by transfusion of whole blood.

FRANCIS J. BRACELAND, "Psychiatry and the Science of Man." *American Journal of Psychiatry,* 114:1-9, July, 1957.

Psychiatry envisages man in the totality of his being and of his relationships. It must be aware of its limitations and beware of the tendency to credit a special discipline with universal sigificance. The final result of such enthronement is always a catastrophic dethronement. Psychiatry is part of the science of man, but human existence shows facets where science and her methodology prove insufficient. Psychiatry deals with the abnormal; the study of the abnormal poses the question of what is normal, but it does not necessarily answer it. The history of psychiatry shows three great periods in the history of mental disorder. Mental disorders have been viewed as evidence of demonic possession, brain disease and psychogenetic disturbances. No one approach can claim a monopoly upon wisdom understanding or therapeutic efficacy. Today's society is seemingly dominated by the "other-directed" concept, in which man finds the motivation of his conduct not in his own ends but in the dictation of the group. Few dare to be different, for to be different brings them under the condemnation of the group on whose opinion they form their own opinion of themselves. But man's dignity cannot be served in ways which tend to depersonalize him or by "over adjustment." In modern mass society people's lives are empty of meaning; consequently they themselves mean little and a quiet depression often results. The psychiatrist has to recognize the casual role of somatic factors and the therapeutic effect of physio-chemical methods, but the basic disciplines of psychiatry must also be accepted by medicine. Psychiatry has shown that it is the inner life of the individual which is of primary importance, and the psychiatrist must determine to what extent an individual's standpoint is truly his own, and to what extent it has been taken over without examination from the environment and is perhaps inadequate for the person's needs. The psychiatrist must be aware of the fact that his work involves philosophical considerations.

Editorial, "Physical Types," *Journal of the American Medical Association,* 164:770-771, June 15, 1957.

It has been assumed that the genotype determines the course which a person's development will take. The extent of individual differences and deviations has been studied by Williams. Many of the terms used by students of human physique do not correspond to any primitive dichotomy of mankind. "The whole subject of physical typing is based on confused thinking, loaded with unproved statements, padded with irrelevancies, and marred by fallacies." The physician resents being imposed upon by the obscurantist vocabulary typical of this subject.

J. V. BASMAJIAN, "New Views on Muscular Tone and Relaxation." *Canadian Medical Association Journal,* 77:203-205, August 1, 1957.

Electromyography shows conclusively the complete relaxation of normal human striated muscle at rest. This does not mean that there is no tonus, but it does mean the definition of tonus has to be modified to state that it is determined both by the passive elasticity of muscular tissues and by the active contraction of muscle. The false concept of continuous neuromuscular activity during rest seems to be a misinterpretation of Sherrington's postural tonus. Any muscle helping to hold the subject upright shows various degrees of activity, but not all muscles need to be active in the upright position.

A. G. MELROSE, Acute and Chronic Intoxication Due to Sodium Bicarbonate. *Scottish Medical Journal,* 2:301-303, July, 1957.

Sodium bicarbonate is widely used as a gastric antacid. Being readily soluble, it can give rise to systemic alkalosis, and chronic usage may result in impairment of renal function. The reaction in the stomach between the drug and hydrochloric acid causes a rapid liberation of carbon dioxide, and the sudden distension of the stomach so produced constitutes a real hazard if a chronic peptic ulcer is near to perforation. Acute poisoning from massive doses of sodium bicarbonate is occasionally encountered.

Editorials

After several years of debate, the Board of Governors and General Assembly of the Association for Physical and Mental Rehabilitation have seen fit to amend the Constitution and By-Laws in such a manner as to give the chapters a very real voice in the administration of the organization In former years, the fact that chapters were not equally developed throughout the country prevented the establishment of a system whereby they could select their own representatives to act as delegates to the national convention. Thus, representatives were elected on a regional basis with the country sub-divided, for this purpose, into but six areas. Since this was an artificial and arbitrary system with the areas much too large for any individual to represent wholly, there were few, if any, opportunities for persons at the grass roots level to make their voices heard on matters concerning the national organization.

With the establishment of the chapter system of electing representatives it is expected that this situation will be remedied. No longer will a member from Maine, for example, attempt to represent all of New England plus the State of New York; a delegate from Louisiana will not be vainly trying to speak for a member from Kansas. In chapter meetings, it will now be pertinent to discuss organizational as well as professional problems, and the chapter representative will be in a position to propose legislation which will reflect the opinion of the majority of the members in his chapter.

In our opinion, the new amendments should have the effect of bringing the work of the association down to its fundamental and democratic level. The active chapter member now has the green light, plus the means, whereby he can make a very real contribution to the future of corrective therapy.

Despite the obvious advantages to the new plan, it will take an active, dynamic and interested chapter membership to achieve results. In the past some chapters have captured membership interest through special projects; scientific and clinic sessions such as the annual meetings of the Southeastern and Texas-Louisiana chapters; the operation of benefit dances and parties for the scholarship fund as have been sponsored by the California and Midwest chapters. These types of projects enlist member support and provide concrete means whereby members can contribute to association work. It is only by these methods that chapters can function in meaningful ways to achieve the objective of having all corrective therapists as true *active* members of the association.

Book Reviews

"Science Looks at Smoking," by Eric Northrup. (New York: Coward-McCann, Inc., 1957. 190 pp. $3.00)

"A realistic survey of the world today reveals that after oxygen, food and water, most adult humans concern themselves with a fourth item of consumption—tobacco," is the opening sentence in this book. Unless it is talk of the atomic bomb, little else has aroused the interest that is displayed by the public in the question of whether smoking causes cancer or heart disease. In a twenty-five page introduction, Dr. Harry S. N. Greene, of Yale, gives his personal views as a pathologist who has done extensive research in the relationship of tobacco and cancer. From this beginning, Northrup attempts to develop an objective view of the present status of this problem. Presenting both pros and cons in the language of the layman, the problem is analyzed and the avenues which appear most profitable to pursue in the light of current knowledge are indicated. This book is a clear, well written and relatively objective picture of smoking and its possible harmful effects, leaving the reader to form his own conclusions. It contains much information on the subject, but the reader gains the impression that the author leans over backward to oppose the popular conclusions.

MLB

"The Handbook of Speech Pathology," edited by Lee Edward Travis. (New York: Appleton-Century-Crofts, Inc., 1957. 1088 pp. $12.00)

This is the most complete and thoroughly professional book which has been published on speech pathology. Readers will be impressed by the scope and depth which this single volume encompasses. Subjects include: speech development, physiology, neuropathology, acoustics, psychodynamic backgrounds, instruments of research, parent counseling, methods in psychotherapy, problems in the public schools, problems in stuttering, aphasia, cleft speech, the deaf, cerebral palsy, the mentally retarded, articulation and voice.

There are twenty-seven contributors to this text. Considering this fact, its style is surprisingly clear and uniform. Each of the thirty-three chapters are separate and distinct units, but each is grouped under the appropriate division of (1) basic considerations, (2) problems associated with organic difficulties, (3) problems unrelated to organic difficulties, (4) psychotherapy and speech therapy.

No particular point of view is stressed. For example, in the controversial area of stuttering, the symptomatic approach is given equal "footage" with that of the analytical approach. Also, there is a chapter which attempts to integrate the various theories of stuttering.

The editor has done an excellent job of managing the use and development of subject material. Minor criticisms would be in the areas of (1) the slight attention given to the place of phonetics as an instrument in speech research, speech pathology and its rehabilitation, and (2) the listing of technical nomenclature without a pronunciation guide. This book should be on the desk of all who are seriously interested in speech, speech research, speech disorders and their rehabilitation.

NWF

"Hirnschaedigung durch Boxsport," by Dr. R. Bergleiter and Prof. Dr. E. Jokl. (Cerebral Lesions Caused by Boxing.) Leipzig: Johann Ambrosius Barth, Verlag. 1956, pp. 16.

This is a report on frequency and severity of cerebral lesions caused by boxing. Acute and chronic conditions with neurological and psychiatric symptoms and with electroencephalographic findings are described. The peculiarities of these brain lesions are discussed.

The authors investigated both the general and specific brain injuries caused by punches directed toward the head, (i.e. brain) in a fight and the equally dangerous falls (on the head) of the totally or partially unconscious boxers. Dementia pugilistica (traumatica) may be developing in all boxers, amateur and professional. Colloidochemical changes must take place in the cell protoplasm of the brain on account of the continuous poundings which are received in a fight. The losing of consciousness in itself, as well as the occasional loss of memory, disorientation, confusion, headache, etc ,point toward acute traumatic injuries of parts of the brain. The acute clinical pictures are presented and three typical case histories are described. A short statistical report shows that fighters with subdural haematomas have a fairly good chance to be saved from death or permanent invalidism by immediate surgery. Of thirty boxers with subdural haematomas as a result of boxing matches, eleven underwent surgery, nineteen did not receive surgery. Of the eleven, six survived and five died. Of the nineteen not receiving surgery, all died. Of the 24 fatalities, 21 were in the age range 15-25. However, factors other than age are cited to explain the preponderance of fatalities in a relatively young age group. Four typical case histories complete this particular chapter.

The authors also discussed symptoms of the acute and subacute stages of "injured" boxers. Seizures, both in the acute state and as long as two years following injury, are described and discussed. The permanent cerebral damages of boxers may show up in neurological and/or psychiatric syndromes. For instance in neurological examinations of a group of old ex-fighters, 50% had double vision, 45% ataxia, 41% speech defects, and 30% complained about frequently severe headaches. Psychiatric examinations of another group of old ex-fighters indicated definite deterioration of intelligence from the slight to a severe degree in 50% of cases; almost 50% were abnormally irritable and hyperactive; 40% were classified as asocial; while one-third complained about different degrees of loss of memory. Lack of insight and abnormal desire of exhibitionism were found in 22%, and 15% showed severe depression. The authors include a statistical presentation of the neurological and psychiatric symptoms of boxers with a record of many years of boxing history. Electroencephalographic findings support the clinical and psychological observations.

RK

"The Rehabilitation of Speech," by Robert West, Merle Ansberry and Anna Carr. Third Edition. (New York: Harper & Brothers, 1957. 688 pp. $7.50)

In terms of addition, deletions, rephrasings and the arrangement of the basic content, this text represents a considerable revision of the 1947 edition. The style and the approach to the problems of speech pathology remain the same.

The style is "heavy." Its tone is dictated by a medical and highly professional vocabulary. The following are typical examples: " . . . the pneumotaxic center of the medulla, often called the *noeud vital;*" "the supraglottic pasageway . . . should have a clearly open lumen." This style leads respectability to the text! it may tend to discourage reader interest for "teachers, nurses, hospital aids . . . " and others for whom the text is intended.

Essentially the approach is (1) explanations of backgrounds in speech pathology, (2) remedial procedures for particular speech and hearing problems. The most effective chapter is "The Bases of Rehabilitory Procedures." This chapter establishes points of view which inevitably dictate the use of techniques.

NWF

"Medical Physiology," Edited by Philip Bard. (St. Louis: The C. V. Mosby Company, 1956. 1421 pp. $14.00)

"Old timers" among the corrective therapists will recall Macleod's *Physiology and Biochemistry in Modern Medicine*, later edited by Bard. *Medical Physiology* is presented as the Tenth Edition of Macleod's opus. The Ninth Edition appeared in 1941, and nine of the eleven persons who contributed to it have cooperated in the preparation of this volume. The editor acknowledges that "Considerable delay has attended the completion of this book." Unfortunately, the text shows the effects of this delay. Of the 102 references to blood coagulation, only one was published as recently as 1950. The section on the Chemistry of Muscular Contraction does not describe the recent developments which Mommaerts has termed "The Counter Revolution in Muscle Physiology." Hill's 1927 chart of the "Relationship between speed and total time occupied in race" is obsolete and should have been replaced by Henry's work. In the short chapter on The Physiology of Muscular Exercise none of the diagrams are less than 20 years old. The chapter on Skeletal Muscle is much briefer than therapists might have wished. A good many errors in statements of fact, in the spelling of proper names, and of dates have been noted by specialists in various fields. These are unfortunate, since they depreciate a text that has many excellent features. The section on respiration, by Carl Schmidt, is probably the best discussion of this subject now available, and the presentation of the central nervous system appears to be an excellent piece of work. The book will probably find its greatest use as a reference rather than as a class textbook.

PJR

"Psychotherapy of the Adolescent," Edited by B. H. Balser. (New York: International Universities Press, Inc., 1957. 278 pp. $5.00)

This book is composed of papers presented during the Symposium on Psychotherapy of the Adolescent at the American Psychiatric Association meeting in Atlantic City, May, 1955. The original papers have been expanded by the authors, and psychotherapeutic techniques and problems, as approached from the various levels of practice, are outlined and discussed by experienced therapists.

The problem of psychotherapy with adolescents is presented on the levels of private practice, school practice, in patient treatment, clinic, and pediatrician and psychiatrist in a combined clinic and intensive hospital treatment program. Of particular interest is the section "A Psychotherapeutic Interview with an Adolescent," a recording of a therapeutic session with comments of the dynamics responsible for the behavioral reaction pattern. The concluding chapter, by the Editor, gives a practical summary and comment on papers included in the symposium.

Practical, well written, and integrated by a basic psychodynamic approach, the problems of the adolescent and his therapist are outlined and techniques of treatment stated and evaluated by experts. This book fills a need for the psychiatrist and general practitioner as well as the educator—in fact all professions which may have contact with the adolescent with emotional problems. In the opinion of this reviewer it should be required reading for all juvenile and probation officers, public and private school teachers, and parents. An adequate bibliography and index complete this excellently edited publication.

DCL

"Integrated Anatomy and Physiology," by Carl C. Francis and Gordon L. Farrell. Third Edition. (St. Louis: The C. V. Mosby Company, 1957. 641 pp. $5.85)

This is a text book designed for use at the high school level. For that purpose it should prove quite satisfactory and may be recommended to the attention of those teaching in secondary schools. It is, of course, too elementary for use by corrective therapy students or by majors in physical education. Such individuals will find this same publisher's *Textbook of Physiology*, by Zoethout and Tuttle, much better adapted to their needs.

PJR

"The Dynamics of Interviewing," by Robert L. Kahn and Charles F. Cannell. (New York: John Wiley and Sons, Inc., 1957. 368 pp. $7.75)

Theory, technique and case histories stressing the dynamics responsible for more accurate evaluation of the personality on the basis of the interview comprise the integrated material presented in this book. The psychological inter-reactions between interviewer and respondent are analyzed and problems of communication as related to manifest and latent content are evaluated in an effort to develop interview techniques on the basis of objective rather than (as in the vast majority of interviews) subjective evaluation. The personality structure of the interviewer is recognized as a sometime deterrent to accurate interpretation of the interview responses. Basic principles responsible for an understanding of the psychodynamics of interviewing are clearly presented, with techniques and case studies for additional clarification of the problems inherent in the subject.

This book will be of value to any person interested or engaged in work where there is the problem of personnel evaluation. It has specific interest and value to the physician, attorney, educator, or any member of the allied disciplines using the interview in evaluation procedure. Bibliography and index are adequate.

DCL

"My Minds and I," by E. V. "Ted" Crane. (Boston: The Christopher Publishing House, 1957. 269 pp. $4.00)

This volume presents the concepts of an engineer who seeks to understand the processes responsible for his own emotional disturbance and who feels he made a recovery through religion. The author amasses a great deal of material and from it, when he is not making direct criticism of Freudian psychoanalytic concepts, he presupposes the presence of a superconsciousness in which "God" motivates, through the higher and lower autonomic nervous centers and systems the behavior of the individual. Many authorities in the field of psychology and neurology are quoted in an effort to support Crane's theory of the interrelationship of the philosophical and behavioral reactions of the individual; however, the work is poorly integrated and the reader has difficulty in comprehending the difference between the "grain and the chaff." Although this book may appeal to educators within the field of religion psychology, there are many texts which present a more basic understanding of the emotions and their relationship with religious experience.

My Minds and I represents a futile effort to understand some of those concepts which, in the light of present knowledge, must be accepted as "intangibles" by the emotionally mature individual. He does no credit either to religion or to psychology in his presentation. This book represents an effort by the author to maintain the integrity of his own ego rather than a presentation of realistic methods of investigation into the motivational reactions underlying behavior.

DCL

"Foot Troubles," by T. T. Stamm. (New York: Philosophical Library Inc., 1957. 122 pp. $4.75)

This little book is designed to acquaint the layman with the cause and treatment of common foot ailments. The mechanics of the foot, foot troubles, care of the feet, footwear, foot exercises, and various pathological conditions affecting the foot are discussed in simple terms. It is the author's opinion that there are only two requirements for useful feet: they must be supple and they must be well muscled. The text is profusely illustrated with both line drawings and pictures, but lacks a bibliography and an index. It should prove quite interesting to the layman who desires a general knowledge of the foot and foot conditions, but the price is apt to deter the prospective purchaser.

PJR

"Health Principles and Practice," by C. V. Langton and C. L. Anderson. Second Edition. (St. Louis: The C. V. Mosby Co., 1957. 491 pp. $4.75)

"Not health experts but well informed citizens is the goal of basic health education" say the authors of the second edition of their book. This volume is directed towards the needs of the college student and has been used as a text for this purpose.

The organization and material is divided into three areas: Part I, "Personal Health Promotion," is directed toward the health and safety of the student, with a chapter on the relationship of heredity and health. Part II deals with "Mental, Emotional and Social Health." This section devotes a long chapter to "Preparation for Family Living," which includes the sociological, psychological and physiological aspects of marriage. Part III is concerned with "Planning for Health Protection." It is divided into two phases. The first takes up the problems of diseases and disorders, emphasizing historical background, causes and methods of control. The second discusses local, state, national and international health services and agencies. The book concludes with an appendix on "Films and Film Sources."

This text is well written, easily read and can be used as a valuable source of information on the field of health. As a famous specialist recently remarked, "Too much of the American doctors' knowledge is on disease and too little on health."

HJB

"Clinical Application of Suggestion and Hypnosis," by William Heron. Third Edition. (Springfield: Charles C. Thomas, 1957. 165 pp. $3.75)

This is the third edition of a small handbook on hypnosis which was first published in 1950. In brief summary the author covers the areas of the professional use of hypnosis: patient approach, degree of the hypnotic state, methods of induction, precautions, and group hypnosis, closing with a final chapter on the use of the tape recorder in patient conditioning.

Although the book appears to be directed primarily toward the use of hypnosis in dentistry, there is much of value as related to the basic principles underlying hypnotic methods and techniques. Rather than a text, this monograph is an outline from which the interested professional may expand his initial curiosity into the more complex concepts of the subject. The bibliography is good but has not been brought up to date from 1950. An index is included.

DCL

Books Received

"Report of the New York State Joint Legislative Committee on Mental Retardation." (Albany: State of New York, 1957. 67 pp. Paper.)

Report on the problems and needs of mentally retarded persons.

"From Sterility to Fertility," by Elliot E. Philipp. (New York: Philosophical Library, 1957. 120 pp. $4.75)

"A Guide to the Causes and Cure of Childlessness."

The National Vitamin Foundation "Report to the Board of Governors by the Scientific Director." (New York: 1957. 81 pp. Paper)

Includes Orr's address, "Nutrition in Programming for Public Health," a description of "Grants-in-Aid Awarded for Research in 1956" and "Summaries of Publications in 1956 Resulting from Research Supported by Foundation Grants."

Publishers are requested to mail books for review directly to the Book Review Editor:

Philip J. Rasch, Ph.D.
567 Erskine Drive
Pacific Palisades, Calif.

Chapter Activities

REPRESENTATION . . . RESPONSIBILITY! These are the results of action by the Board of Governors at the recent national convention in relation to chapter participation in the administration of our Association. An amendment to the constitution and by-laws provides that:

"The Representative Assembly shall be composed of Representatives duly elected by the Active membership of the Chapters and National Association." and "The Representative Assembly shall be composed of representatives duly elected by the Chapters of the Association at their annual meeting and in the manner provided for by the Chapter Constitution. The results of said election will be forwarded by the Chapter Secretary to the Credentials Committee Chairman at least thirty (30) days prior to the Association's Annual Meeting, for review and approval as stipulated in paragraph (F) below," and further that, "Each Chapter shall elect one (1) representative for every twenty-five (25) Active members or major portion thereof; Chapters having twenty-four or less Active members shall elect one (1) representative. Elected representatives shall be Active members at both National and Chapter levels for two (2) consecutive years prior to election and must consent to accept the office in good faith and perform such duties as are stipulated within the Constitution and By-Laws and as may be assigned by the Speaker of the Representative Assembly. The Chapter President will certify in writing to the Credentials Committee Chairman that the Representatives were elected under the above provisions," and finally that, "Representatives shall be elected for and shall serve for a term of two (2) years. They shall take office at the Annual Meeting of the Association following their election and subsequent approval by the Credentials Committee."

In order to implement this change in the method of electing representatives, the Board of Governors passed a resolution to the effect that the representatives should be elected by the chapters so they could take office on January 1, 1958. The Representatives in office during the Chicago meeting would serve as an interim body until this date, at which time the newly elected Representative Assembly assumes the duties of that body. This was necessary to insure a continuing governing body during the change.

There is no doubt that the implementation of this method of electing Representatives will cause some concern. It is the desire and duty of the Chapters Committee to reduce this possible confusion to a minimum. Certain policies will be established and suggestions made toward this end.

On the basis of information being obtained by the Chapters Committee a determination of the number of representatives to be elected by each chapter will be made. All national members will be included in a chapter area and geographical boundaries will be established so all areas of the country will be included in a chapter area. This may be a temporary arrangement which can be adjusted and changed as necessary or as indicated by the formation of new chapters. In this respect it should be remembered that it is not necessary for a member to attend chapter meetings to be a member of a particular chapter.

FRANK S. DEYOE, Jr.,

Chairman, Chapters Committee

News and Comments

GERIATRIC PROGRAM SHOWS GAINS

A new dynamic treatment developed by Veterans Administration for aged veteran-patients is rehabilitating many severely disabled oldsters who had seemed destined to spend the remainder of their lives in hospitals, according to the agency.

At the VA hospital in Fort Howard, Md. for example, 50 of a group of 60 aged patients receiving rehabilitation treatment overcame their disabilities sufficiently so that they were discharged from the hospital. At the VA hospital in Minneapolis, Minn., 25 of a group of 130 left the hospital and took jobs, 40 others were discharged to their homes, and all except 10 of the remaining 65 showed worthwhile improvement. At the VA center in Bay Pines, Fla., 114 of a group of 385 returned to their homes, 80 went into the VA domiciliary home at Bay Pines to live, eight went to nursing homes, and many others received enough benefit so they can live happier, more active lives within the hospital.

Dr. A.B.C. Knudson, director of the physical medicine and rehabilitation service at VA central office in Washington, D.C., said the oldsters in these and other VA hospitals were victims of strokes, hardening of the arteries, arthritis, multiple sclerosis, and other conditions. They were placed on special rehabilitation wards for the aged at the hospitals after they had received maximum benefits from specific medical and surgical treatment. Some at first could not get out of bed without help, others could not propel themselves in wheelchairs, and a number were too confused to be able to get about the hospital alone.

Dr. Knudson said an individual program of rehabilitation was planned for each, under guidance of a physiatrist. Physical and corrective therapists used exercises to build the aged patients' strength and coordination, and taught them to walk and get about and perform activities of daily living on their own, he said.

Braces were fitted for patients who had lost use of limbs, Dr. Knudson said.

Participation in arts and crafts, under guidance of an occupational therapist, improved the elderly veterans' performance and ability to adjust emotionally, he said. Visits of volunteers from the community helped the oldsters gain interest in living and in making friends.

"Nurses, social workers, and other members of the hospital staff team also played an important part in the rehabilitation process," Dr. Knudson said.

DR. AUTH APPOINTED VA CHIEF OF NEUROLOGY

Dr. Thomas L. Auth, since 1954 chief of the neurology service at the Veterans Administration hospital in Washington, D. C., has been appointed chief of the neurology division at VA central office in Washington. He succeeds Dr. Benedict Nagler, who left VA September 8 to become superintendent of the Lynchburg Training School and Hospital at Colony, Va.

Dr. Auth is certified in neurology by the American Board of Psychiatry and Neurology and is on the teaching staff of Georgetown University School of Medicine.

After receiving the M.D. degree from Georgetown University in 1948, Dr. Auth served his internship at the District of Columbia General Hospital in 1949 and residencies at Georgetown University Hospital and the former VA hospital at Framingham, Mass.

From 1951 to 1953, he was chief of the neurology service at the U.S. Army Hospital at Camp Atterbury, Ind.

He was born August 19, 1924 in Springfield, Mass.

DR. SCHAFFER NEW PM&R PROGRAM DEVELOPMENT CHIEF

Dr. Frank J. Schaffer, chief of the physical medicine and rehabilitation service at the Veterans Administration Medical Teaching Group hospital in Memphis, Tenn., has been appointed chief of program development in the same service at Washington, D. C. He succeeds Dr. Frederick J. Balsam, who is now assistant chief of the physical medicine and rehabilitation service at the VA hospital in Fort Howard, Md.

Dr. Schaffer is certified by the American Board of Physical Medicine and Rehabilitation and is a member of that academy and congress and of the Southern Medical Association. He joined VA in September 1946 and has served at VA hospitals in Fort Lyon, Colo., Fort Thomas, Ky., Columbia, S.C. and at the VA regional office in Albuquerque, N. Mex.

Among Dr. Schaffer's responsibilities in Washington, will be further development of the career residency program in physical medicine and rehabilitation, the second largest career residency program in VA. He is one of the VA's pioneers in his specialty and developed the career residency program at the VA hospital in Memphis.

From April 1944 to March 1946, Dr. Schaffer was in the United States Public Health Service as an assistant surgeon in Mexico and the West Indies, a physician in the war food program, and an epidemiologist in Goldsboro, N.C.

VA PSYCHOLOGISTS PLOT EMOTIONS

Veterans Administration is measuring human emotions—a new field of approach that may identify the basic patterns in mental diseases. The patterns of characteristics which go together to form a given mental disease are at present unknown or only approximately identified, Luther L. Mays, Ph.D., chief psychologist of the VA hospital in Washington, D.C., said.

Using electrical apparatus to record hidden physical responses to emotion-arousing situations, the research group headed by Dr. Mays and Harold F. Corson, M.D., chief psychiatrist at the hospital, plots emotional reactions in terms of what takes place within the body. They said they are learning a great deal about the relationship between emotions and mental illness. The main instrument used in the tests of mental patients is a polygraph, which makes "readings" from six areas of the body. It combines an electrocardiograph, which records heart action; an electroencephalograph, which records brain waves; an instrument which measures skin resistance changes as the patient perspires; an apparatus which records minute muscular activity from the patient's jaw and arm, and a rubber tube across the chest which records breathing.

As the patient relaxes in bed in a darkened room, he listens to recorded music that is alternately soothing and rousing. This is followed by a series of questions from Dr. Mays concerning problems the patient may have in connection with health, money, his own capabilities, and relationships with other people. When a test is finished, Dr. Mays and Dr. Corson have a 30-minute tape recording of the patient's answers to questions and a strip of graph paper with six wavy lines that tell the story of his emotional responses.

Data on the polygraph recording and information obtained from standard diagnostic tests and clinical observation are used by the doctors to prepare a chart for each patient indicating the emotional pattern nd type of behavior. "We hope charting the emotional patterns of many patient indicating the emotional pattern and type of bein psychological tests and clinically observed symptoms will provide a better understanding of the true character of mental illness, which would enable us to improve methods of treatment," Dr. Mays explained.

INDIGENT CANDIDATE EMPLOYEE FUND ESTABLISHED

A new way to help mentally ill patients back to normal life as breadwinners has been found at the Veterans Administration hospital in Lexington, Ky.

VA said an "Indigent Candidate Employee Fund" established by volunteer workers, in cooperation with hospital authorities, encourages patients who have no financial resources to rehabilitate themselves.

Through the fund, veteran-patients receive money awards for work they do as candidate employes in the hospital, or to apply for jobs outside the hospital, or to tide them over until they receive their first pay checks.

One indigent patient received $28 from the fund for certain jobs he performed in the hospital. Through this experience, he was able to qualify for regular work in Lexington at $1.10 per hour. He has been at work seven weeks and has earned $303, or 11 times the amount advanced him from the fund.

Another patient received $34 while he was doing hospital work. He secured daytime work in the city and returned to the hospital each night. In his first three weeks on the job he earned $180 at the rate of $1.25 an hour, five times more than he received from the fund.

VA officials said experience with the Lexington patients demonstrates that investments made by the community through the volunteers' fund are returned to the community several fold. They said tax consumers are being transformed into tax producers and the community is able to profit from the skills and wages of rehabilitated patients.

The fund is two years old this month (September). Of the 15 persons who have drawn on it, 10 already have been discharged and are getting along successfully in the community, Dr. A. P. Dell Cort, manager of the Lexington hospital, said.

"The donations of volunteers to the fund are sound investments in the future of men whose potentialities for productivity might not otherwise be realized," Dr. Dell Cort said.

To date, the fund has received $1,116 in donations, the largest, $280, and the smallest, $10. A total of $881.50 has been disbursed to patients.

NEW STUDY TESTS LOSS OF EFFECTIVENESS OF ANTIBIOTICS

A study to determine to what extent antibiotic drugs are losing their effectiveness against certain infections has been announced by Veterans Administration.

Six VA hospitals located in Atlanta, Ga., Batavia, N.Y., Brooklyn, Manchester, N.H., Minneapolis, Minn., and Washington, D.C., and the Dominion of Canada Department of Veterans Affairs are cooperating in the project. Dr. Max Bovarnick of the Brooklyn hospital is chairman.

The study is part of a new VA program for research in surgery headed by Dr. Lyndon E. Lee, Jr., coordinator for research in surgery at VA central office in Washington.

Dr. Bovarnick said it has been widely observed in many parts of the world that an increasing number of microbes are developing resistance to the antibiotics, such as penicillin, so that the drugs are no longer useful against infections which the germs cause.

The VA study will begin with one of the most important groups of these antibiotic-resistant microbes, the staphylococci, some of which cause infections in wounds and following surgery. Since staphylococci are commonly present in the air, on objects in everyday use, and on the skin of humans, antibiotic-resistant staphylococcal infections could become a serious problem in all hospitals, VA said. The VA study will undertake to determine the magnitude of the problem in its own hospitals by a careful survey of all staphylococcus infections in the cooperating hospitals.

VA said it will seek to decrease the occurrence of sta-

phylococcus infections by applying modern control and sterilizing techniques to avenues of spread of the infection in hospitals, such as air, hospital personnel "carriers," bed linen, and instruments.

VA said it will study factors that might lead to decrease in resistance of the infecting organisms to the drugs in order to restore the usefulness of these drugs.

VA plans to extend the study and its findings to other groups of microbes which become an increasingly serious problem as they develop drug resistance, the agency said.

NEW MACHINE MAKES X-RAYS IN OPERATING ROOM

A new type x-ray machine originated by Veterans Administration for the first time permits x-ray films to be made safely while the patient is on the operating table. The machine will enable doctors to cut the time required for pre-surgery x-ray diagnosis to two or three minutes in crucial cases.

After the new machine is swung into position over the patient on the table and the film exposure is made, the picture can be developed with a Polaroid film processor and interpreted so that surgery can begin in a minute and a half. Formerly, x-ray apparatus had to be used with great caution in operating rooms in the presence of explosive anesthetics.

The new VA x-ray unit is safe for use in the operating room because the x-ray tube and the high voltage cables supplying 125,000 volts to the tube are uniquely designed to eliminate the danger of setting off an explosion.

One of the first of the new x-ray units produced was installed recently in operating rooms of the VA hospital in Los Angeles, where doctors already are finding many uses for the apparatus that enable them to provide better care for patients. Mounted on the ceiling, the unit has built-in general fluorescent lighting and a carriage with a major operating light to illuminate the surgical field or area of the body where surgery is performed. When the x-ray tube is positioned to take a picture, the operating light automatically swings away from the surgical field. After the film exposure is made, the light returns automatically to its correct operating position, saving valuable time.

The movement of the tube is activated by a motor so that the surgeon and other members of the surgical team do not have to touch the apparatus.

The x-ray transformer and motor, which are not explosion-proof, are installed adjacent to the operating room, to prevent explosive gases from drifting into the control area. An x-ray technician operates the motor from a control booth.

The x-ray unit was developed for VA by commercial x-ray manufacturers from specifications furnished by the VA supply service in Washington, D. C.

VA APPOINTS NEW CHIEF OF PSYCHIATRY

Dr. John J. Blasko, former Connecticut Commissioner of Mental Health has been appointed Chief of the Veterans Administration Psychiatry Division in the Psychiatry and Neurology Service in Washington, D.C. He reported for duty August 15, 1957, succeeding Dr. Stewart T. Ginsberg, who left VA in May 1957 to become Commissioner of Mental Health for Indiana.

Dr. Blasko served as Chief of Psychiatric Training at VA Central Office from March 1952 to May 1954 and as Director of Professional Education at the VA Hospital in Gulfport, Miss., from April 1947 until his appointment to Central Office in 1952. He was born June 29, 1912 in Carbondale, Pa., and received the M.D. degree from St. Louis University School of Medicine in June 1935. He is certified in psychiatry by the American Board of Psychiatry and Neurology. From January 1945 to August 1946, Dr. Blasko served as a lieutenant (sg) in the Navy at Parris Island, S. C., and the National Naval Medical Center at Bethesda, Maryland.

VOCATIONAL GAINS OF PARAPLEGICS CITED

A paralyzed veteran owns the only hospital in his town. Aside from keeping the hospital running and conducting a polio clinic on the side, he's also chief surgeon, performing operations from his wheelchair. Another paralyzed veteran is a playground director, organizing play activties that have kept hundreds of youngsters off the city streets. Still another is a minister who preaches sermons from his wheelchair. And the paralysis of still another has affected his voice as well as his limbs, so that he can speak only in a whisper. Yet he learned to be a lawyer and argues cases in a courtroom kept so quiet that his whisper can be heard.

These and nearly 500 other cases are described in a recently published Veterans Administration pamphlet, "Occupations of Paraplegic Veterans of World War II and Korea"—the first major study ever attempted of the work experience of paralyzed veterans.

The pamphlet is on sale at the U. S. Government Printing Office in Washington, D.C., at 35 cents a copy. VA will use it in counseling and planning the vocational rehabilitation training of disabled veterans. It also should be useful to all in the field of rehabilitation and employment of the handicapped, as well as to the handicapped themselves, VA said.

Paraplegia, VA explained, results from a spinal cord injury that causes paralysis. Only a generation ago, before modern advances in medicine, it meant almost certain death. But today, paraplegics can look forward to normal life expectancy, as well as normal activity even though it's from a wheelchair.

In a foreword to the VA pamphlet, Veterans Administrator Harvey V. Higley called the study "a vivid demonstration of the resiliency of man, of his tremendous ability to adapt his life to the limitations of a severe physical handicap."

"Ability is not confined to the able bodied," he said. "The disabled, too, can contribute to America, if only they are given the opportunity to do so."

DR. CHAMBERLAIN HEADS ATOMIC MEDICINE PROGRAM

Dr. W. Edward Chamberlain, professor emeritus of radiology at Temple University Medical School and president of the American Roentgen Ray Society, has been appointed to head the Veterans Administration atomic medicine program in Washington, D.C. He will serve as special assistant for atomic medicine to the VA Chief Medical Director, Dr. William S. Middleton, and as associate director of the VA research service.

Dr. Chamberlain was director of the Temple University Hospital department of radiology and professor of radiology at Temple University Medical School in Philadelphia from 1930 to February 1957. He was head of the department of radiology at Stanford University Hospital from 1920 to 1930, professor of medicine in charge of radiology at the Stanford University Medical School from 1926 to 1930, and in private practice as a radiologist in San Francisco from 1919 to 1930.

Dr. Chamberlain is a Fellow of the American College of Radiology and a member of the Radiological Society of North America, the American Radium Society, the Harvey Cushing Society, and the American Medical Association.

VA PLANS TO MOVE AREA OFFICES

Three Veterans Administration area medical offices will be moved as part of a geographical realignment of VA medical areas to provide more efficient administration. When space can be obtained and adequate notice can be given to personnel, the Columbus, Ohio office will be moved to Indianapolis, Ind., and the St. Paul, Minn., office will be moved to Omaha, Nebr. The St. Louis office will be moved to Dallas, Tex., but no date for the move has been set.

Approximately 28 persons are employed in each of the three offices, which supervise VA medical programs in multi-state areas.

In realignment of areas, jurisdiction for the upper peninsula of Michigan and the states of Wisconsin and Illinois

AMERICAN BOARD FOR CERTIFICATION OF CORRECTIVE THERAPISTS

The following named candidates have successfully passed examinations conducted by the Certification Board and are entitled to be listed on the Official Registry, 1957-58.

Colorado
William McNamara

Illinois
Fred Fahey
Florian Surdyk

New York
David Ser

Ohio
Robert L. Curtis

Wisconsin
Jerry Mills

will be transferred from the St. Paul area medical office to the Indianapolis area medical office. Jurisdiction for the state of Kansas will be transferred from the St. Louis area medical office to the Omaha area medical office. After the Dallas area medical office is established, jurisdiction for the state of Missouri will be transferred to the new Omaha office.

The realignment is to equalize the work load among the area medical offices. All told, VA has seven area medical offices. The offices located in Boston, Trenton, N. J., Atlanta, and San Francisco are not affected by the move.

NP INTERVIEW RATING SHEET AIDS TREATMENT

Many needed answers about the effectiveness of various methods of treating mental patients may be supplied the nation's doctors through a new yardstick developed by Veterans Administration, VA has announced.

Psychologists and psychiatrists at 12 VA neuropsychiatric hospitals have designed and successfully tested a form on which symptoms of mental illness can be rated accurately through interviews with patients. Psychologists at the 12 hospitals already have interviewed nearly 2,000 patients admitted for severe mental illness (primarily schizophrenia) and have recorded on the rating sheet the degree or absence of symptoms such as withdrawal, anxiety, and disorganigation of thinking.

The same group of patients is being interviewed and rated by the psychologists again. Two rechecks will be made, one at six months and the other at a year after the original interview.

Comparison of ratings from the three sets of interview sheets will provide a statistical measure of improvement, VA said.

Some of the patients already have recovered sufficiently to leave the hospital and have returned home. Although successful release from the hospital is the most persuasive evidence of successful treatment, improvement in the hospital also is of importance, VA explained. The rating sheet will be used by VA to help determine the relative effectiveness of different forms of treatment for mental illness and of different mental hospital designs and staffing patterns. Sufficient accuracy and dependability in recognition of symptoms have been achieved to justify use of the form in large-scale research, VA said.

Development of the sheet is one of the basic steps in a five-year cooperative program known as the psychiatric evaluation project (PEP), which was started by psychiatrists and psychologists at the 12 VA mental hospitals in the summer of 1956.

The hospitals are at Brockton, Mass.; Fort Lyons, Col.; Jefferson Barracks, Mo.; Lyons, N. J.; Marion, Ind.; Montrose, N.Y.; Palo Alto, Calif.; Roanoke, Va.; St. Cloud, Minn.; Salisbury, N. C.; Salt Lake City, Utah and Topeka, Kans.

The headquarters office for the project is located at the VA hospital in Washington, D.C.

QUADRIPLEGIC RUNS SUCCESSFUL INSURANCE BUSINESS

A paralyzed veteran in Grosse Pointe Woods, Mich., sells insurance by thumb. He's Norbert N. Revyn who is paralyzed from the neck down except for the use of his right thumb. He sustained shrapnel wounds in combat at Casino, Italy, during World War II.

Revyn conducts a thriving insurance business from his wheelchair, using an operator's headset and a special telephone attachment that makes it easy to dial with his thumb. The 39-year-old former anti-aircraft artilleryman has been in the general insurance business for five years.

Prior to that, he spent five years in Army and VA hospitals, and one year in insurance training under Public Law 16, which is the vocational rehabailitation act for disabled veterans. He received the training in his specially adapted home, built with the assistance of the Veterans Administration. He had no previous experience in the insurance field. This career was selected by him with the help of VA vocational counselors.

Veterans with paralyzed arms and legs, medically known as quadriplegics, are learning to work again in Veterans Administration hospitals as part of their medical treatment. Pegs fastened to the paralyzed hands and VA-invented devices attached to a standard typewriter make typing possible for some. Others through special devices are learning drafting, photography, woodworking, metal work, and radio and TV repair.

Some 450 quadriplegics are in the seven VA hospitals that have special centers for treatment of patients with spinal cord injuries. Most are victims of gunshot wounds or accidents. Thirty-seven are patients at the Bronx hospital; 31 at Cleveland; 89 at Hines, Ill.; 95 at Long Beach, Cal., 82 at Memphis; 70 at Richmond, Va., and 50 at West Roxbury, Mass.

One of the typewriter devices, a clear plastic sheet with a steel clamp and a brass rod, helps guide paper into the machine and lift the paper bail bar. It was designed by the educational therapy chief at the Memphis Hospital, Thomas M. Hughes.

Another is a knob with four projecting metal pins, designed by H. Lavern Link, rehabilitation training officer at the VA regional office in Nashville. The paralyzed patient inserts a typing peg between two of the pins for leverage to turn paper backward or forward in the typewriter.

Drafting is difficult for quadriplegics, even with a drafting machine. Some of the difficulty is overcome at VA hospitals by using a special drafting machine that remains in place after positioning. Among jobs related to drafting, quadriplegics can learn to do a number well, include checking drawings and materials control, determining the amount of material to order, VA said.

In electronics, quadriplegics are learning to perform testing and inspecting satisfactorily. Special cuffs and wristlets stabilize the wrists, and tools are fitted with loops that are inserted into the wristlets. Wearing individually designed braces and cuffs to stabilize the wrists and hands, quadriplegics learn to use cameras, develop film, and print photographs at the hospitals.

Most shop machinery does not require modification for use by quadriplegics, VA experience shows. Patients operate engine lathes, bench milling machines, bench grinders, buffers, power hack saws, and disc sanders by motion from the shoulder or upper arm.

For gas welding, VA has developed a movable mechanical arm that holds the welding torch.

VA doctors say only a few patients with spinal cord injury, those with quadriplegia caused by complete lesions high in the spinal cord, do not have the potential for holding some kind of a job.

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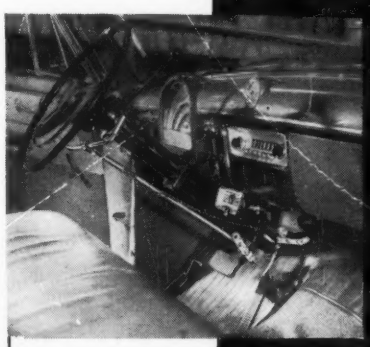

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COMMISSION ON HEALTH CAREERS FORMED

To meet the lack of manpower in the health field, the National Health Council has announced the formation of a national commission to attempt to solve the problem. Dr. Leonard A. Scheele, former Surgeon-General of the United States Public Health Service and now president of the Warner-Chilicott Laboratories, Morris Plains, N. J., will act as chairman of the new commission.

According to a survey recently conducted by the National Health Council, there is a need for 70,000 more graduate nurses, 8,000 occupational therapists, 13,500 physical therapists and 5,000 medical social workers. The supply of specialists in related areas is also very short, according to the survey.

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